

# BLOCK BUILDING

## A PRACTICAL GUIDE FOR MOTHERS & TEACHERS

*By*

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CLEVELAND, OHIO.



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DEDICATED TO MY  
STUDENTS  
AND  
TEACHERS

With Whom It Has Been  
a Great Privilege  
to Work.

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## FOREWORD

This volume is intended primarily as a hand book for the use of teachers in the classroom, for students in training and for mothers in the home.

It has been written in response to many requests for some definite, practical suggestions for the selection and use of building blocks. In its preparation I have tried to stress two main points, first, the significance of the child's interest in play with blocks, and second, the need for an appreciation of the educational possibilities of this type of material in order to help the child to use it more consciously and more intelligently.

Some one has said, "We can hold a dollar so close to the eye that it obscures the entire landscape." It is possible that one may be so absorbed in a pet scheme that she becomes oblivious to other interests. Therefore, I wish to make it clear that in devoting an entire book to the subject of blocks, I have not lost sight of the educational value of the many other materials and activities which meet the needs and interests of little children.

I would not minimize the emphasis put upon the Games, Music, Science, Literature, Art or the various types of other Manual Activities such as clay modeling, painting, crayoning, weaving, sewing and construction work with both cardboard and wood, but would give the work with blocks *as* important a place in the curriculum as is given to these other activities.

There are many books giving explicit directions for the use of clay, paint, paper, cardboard, etc. and yet little has been published regarding the use of blocks, although this type of material

enters quite as much into the play life of young children as does the cutting of paper, the molding of clay or the digging in sand. The "Psychology of the Kindergarten Building Gifts" by Miss Elizabeth Harrison (published in 1905) and "The Use of the Kindergarten Gifts" by Miss Grace Fulmer (published by Houghton Mifflin Company in 1917) are the most recent publications along this line. Both are valuable contributions from the psychological, philosophical and pedagogical points of view and no instructor of Kindergarten Training classes should be without them. Miss Fulmer definitely states in the preface of her book, "The purpose of the volume is not to develop specific methods and devices for the imitative use of kindergartners. The procedures presented are but illustrations or embodiments of universal principles which may be applied in a thousand varied ways. If the reader grasps the laws of growth and education which are here made concrete, and feels inspired and informed to make her own applications in the kindergarten, then the aim of this book is achieved."

Miss Fulmer has presented definitely, clearly and artistically, the fundamental educational principles underlying the use of the Froebelian Gifts, but experience with students and teachers has taught the writer that there is a definite need for a greater abundance of practical suggestions to bridge the gap between principles and their application. Illustrations of things to be made together with directions for making them are quite as necessary in connection with building blocks as with other materials. The teacher possessed of a creative mind will not confine herself to them while the teacher not so gifted needs the help they afford until, through their mastery, she is able to initiate problems of her own.

The suggestions and illustrations to follow are not limited

to the Froebelian blocks but to a greater variety of sizes and shapes in keeping with the recommendations of modern educators for larger and more practical materials in kindergarten and primary schools. They are an outgrowth of some twenty-five years of experimentation with blocks, first as a director of a kindergarten, later as an instructor in a Kindergarten Training School and at present, as a supervisor in a large city public school system where some ten thousand children are daily handling blocks and continually demonstrating their practical value for both classroom and home use. The work herein outlined is based on the actual results obtained by the children in the Cleveland Kindergartens, save in those instances where the work of students or teachers is shown and is so designated.

Chapters IV, VI and XVII are intended primarily for the class-room teacher but it is hoped they may prove helpful to the mother in the home as well.

As my meager contribution to the healthy, happy and wholesome play of little children who have been the source of my greatest inspiration, I now present this material for publication.

MARGARET A. TRACE.

Cleveland, Ohio.

June, 1927.



## INTRODUCTION

How old are you? This is not to be answered in terms of years or months but in terms of the thrills you have when you recall your childhood days. The day when you attended your first party or the day when the Superintendent visited your class and you were the only one who knew how to spell "hippopotamus"; the days when you went swimming and hunting and horse-back riding; the days when you played with marbles and balls and hoops and kites or dressed up in mother's skirts and went to visit the little girl across the way; yes, and the time when you had the chicken pox and had to remain in the house for one whole week—that never-to-be-forgotten week—when you had your first real lesson in the meaning of "eternity" in spite of the fact that everybody was racking his brain to think of some way of helping you to while away the hours.

Do you remember the box of dominoes that came through the mail from Aunt Mary with the letter that she hoped you would enjoy the contents of the box and "incidentally keep up your practice in arithmetic?" And do you remember all the things you did with those dominoes that Aunt Mary would never have called arithmetic because, of course, by arithmetic she meant counting and adding? She did not think of the many other things there were for little boys and girls to do with dominoes that might some day *help them to understand arithmetic a little better*, yes, and *even help them to keep their pencils from wobbling when they tried to do their sums*, because we all know that when little boys and girls first begin to do their sums, pencils have a queer way of making marks where they aren't supposed to make them.

Do you recall how you stood those dominoes on end in a long straight row and just for fun pushed one over against the one

next to it and, in the twinkling of an eye, the entire row was down?

Of course you didn't know nor care anything about the "communication of motion" (or "transmission of force") but nevertheless you were *playing* with this scientific principle.

And do you remember how those little wooden blocks were turned into soldiers and marched in twos and fours and eights?

You weren't especially interested in "group concepts" or "addition" or "multiplication" but, even so, you were *playing* with these mathematical principles. Whether you knew it or not, your nerves and your muscles knew it and later, when you were told that the figure "2" meant two objects, you somehow seemed to understand what it was all about and your teacher said you were a "very bright child".

Do you remember, also, how you would place those dominoes together end to end and make long narrow side-walks or fences around a field? And I wonder, too, if you didn't sometimes lay a floor inside this fence or enclosure just to see how many blocks would actually be needed to cover the surface? or perhaps play it was a box or bin and completely fill it with blocks? Measurement in terms of "linear", "square" and "cubic inches" was not troubling you in those days and yet you were *unconsciously getting the idea through your play*. And then I am sure that you

used to place two dominoes a little distance apart  and

two more across the top  then two more and so on until

you had made a high tower.



You would only have stared in ignorance or if you had a

sense of humour would perhaps have laughed at the sound of the words had anyone called your attention to the "center of gravity" or "law of equilibrium," and yet you had in your play obeyed this natural law and your tower stood straight and tall with never a hint of falling. Perhaps it did fall a few times when you were in too much of a hurry and failed to "calculate" as carefully as you might or because your fingers didn't seem to be quite able to place the block just where you knew it belonged. By and by, however, your fingers became stronger and even Aunt Mary, had she been there, would have ceased to think of arithmetic long enough to find satisfaction in the fact that you were gaining in *skill of hand* and *control of material*.

The manipulative and constructive instincts were not discussed in those days since psychologists were too concerned with abstract analyses of the manner of the "mind's unfoldment" to investigate the reasons why children preferred to use material in a hundred different ways than the one for which it was primarily intended.

But why spend more time recalling to your mind the early plays of childhood when a deeper purpose prompts the writing of this little book?

Sufficient it is to say that only as you recall the many facts that you learned informally through your play, long before you were ready for a study of formal subject-matter will your attitude be understandingly sympathetic with the present day practice of *having much play with things as a foundation for the future interpretation of language and mathematical signs and symbols*.





## CHAPTER I

### PLAY THINGS—WHY AND WHAT?

#### *Toys That Appeal:*

Before the toddler has sufficient muscular skill to join in the running, skipping and jumping games of older brothers and sisters, we find him sitting on the floor surrounded by a variety of toys. His interest is concentrated at first upon those objects which produce sound and have movement, but when he finds that no further possibilities are revealed, he turns from them to other types of playthings chief among which are spools and blocks. These can be arranged in a variety of ways and for this reason are constantly making new demands upon his ingenuity. It is in this first simple play on the nursery floor that we find the germ of the later industrial or manual activities, and wise is the parent who provides for the expression of this interest by supplying her child with appropriate material. The selection of suitable toys, however, from the myriads of those offered in the shops today has become a real problem.

The modern toy-shop is quite as interesting to adults as to children. They enjoy the repetition in miniature of those objects which have entered into their daily activities. The more perfect the toy, the more does it make its appeal to the adult.

I stood beside a father who gazed with admiration and longing upon a toy automobile large enough for a small child to ride in.

It was an exact duplicate of a coupe—luxurious in its upholstery, complete as to accessories and perfect in construction. “Gee! wouldn’t my kid like that!” I heard him say to a gentleman who stood near. I gathered from other remarks that only one thing prevented its purchase. What a blessing it was that the price was prohibitive and the father spared the disappointment of seeing his child lose interest in the thing that had caught and held his, the father’s attention! What a blessing, too, that the child was spared the boredom which follows or accompanies play with a too finished toy!

How are we to help parents realize that the toys which appeal to children are those which meet children’s needs? And what are the needs of little children? They are the needs that mankind has had thruout the ages, namely, *to do*, *to tell*, *to make* and we might add, *to enjoy*, if it were not that our ability to enjoy is determined largely by what we *do*, *tell* and *make*. It is true that one may enjoy a work of art without having himself produced one, but how much keener the enjoyment if one has tried to express himself in the same or along similar lines. How can one truly appreciate the worker unless he himself has worked? Who made it? Who did it? Where did it come from? What is it for? These questions are on the lips of every child. Why? Because their own meagre attempts *to do*, *to tell* and *to make*, sometimes successful and sometimes not, have led them to look for the creative source back of all things. Indeed, if we wished to philosophize still further, we might add that respect and reverence for the Creative Principle of the universe have their beginning in this naive wonderment as to how this or that has come to be. Is it not out of man’s desire *to do*, *to tell* and *to make* that philosophy, literature, music, art, industry and many forms of recreational activities have developed? Can we afford, there-

fore, not to nurture in every possible way this innate desire, on the part of the child, for self-expression? And must we not continually remind ourselves that the toy or material which will satisfy for any length of time must be one with which the child can *do* something, *tell* something, or *make* something?

It must also make a continuous and progressive demand upon his growing physical, intellectual and emotional powers or his interest wanes, hence the necessity for selecting as playthings those which are so teeming with possibilities that new discoveries are made each time the child plays with them. Too often the ready-made toy, complete as to details and perfect in construction, does not permit of these added discoveries and therefore ceases to satisfy for any length of time. Blocks, on the other hand, by virtue of their possibilities enable the child *to do*, *to tell* and *to make* many different things and so have a peculiar fascination for him. There is a marked difference of opinion, however, as to the value of building blocks and also regarding the method of their use. As a result there is a great lack of uniformity throughout the country both in the material and in the objectives to be realized.

Some of the current practice shows that much less thought is given to their selection and use than is given to the selection and use of other materials. Construction paper, drawing paper, clay, crayons, paint, paste et cetera are chosen with great care but blocks are often purchased with little regard as to the *kind*, *number*, *size*, *quality* or *range of possibilities*.

Manufacturers have become discouraged because of their inability to furnish material as infinite in variety as the specifications sent to them. Local concerns have, therefore, been called upon to provide the blocks for their own communities. Lack of adequate machinery for this type of work has given rise to inac-

curacies of cut and finish that have brought discouragement to the child when he has attempted to build with them. There is at present a pronounced feeling on the part of many teachers and supervisors that the time has come for some degree of standardization of this type of material.

Interest in this movement will come, however, only with a keener knowledge and a more sympathetic appreciation of the place blocks hold in the play life of the child.

### THE EDUCATIVE VALUE OF BLOCKS

#### *Motor Control:*

Perhaps at no time in the history of education has such emphasis been placed upon the health of the pre-school and school child as at present. Plays and games are stressed as never before; greater freedom in moving about the room is being encouraged; movable furniture is being generally advocated; natural sitting and standing postures as opposed to the old military erectness are urged and sleep, rest and nourishing food are topics for discussion at parents' meetings. Does it not follow, then, that one of the first things to be considered in connection with play materials should be their effect upon the physical development of the child?

Three main points are to be presented from the health point-of-view in favor of blocks:

1. In this kind of play the child is constantly changing his position.
2. The large muscles—the first to develop in the growing child—are employed in the lifting, pulling, pushing, reaching, stretching, stooping and carrying, necessary in the handling of blocks.

Because of this, children do not feel so much the need for exercise on the slide, or the chinning pole, or the swinging ropes in order to relax tense muscles by a change of position. Indeed, physical activity is so tied up with their block building that less of the larger play apparatus is necessary in the classroom.

3. The entire hand is used and not just the muscles of the fingers as is true in the use of crayons, scissors and other small tools.

*Satisfies the Desire to Handle Things:*

It is by means of the senses that one first comes in contact with the outside world. Through some mysterious process, impressions received from the outside world in the form of vibrations, are conveyed through certain nerve channels to the brain, the seat of the greatest transforming power in the universe—namely the Mind. Here these vibrations are changed into what we know as *mental images*. Without mental images men could not visualize; they could not recall past experiences; they could not associate one thing with another; they could not communicate with their fellows by means of either spoken or written language, since words are after all but external pictures of mental images.

Sense contact then, as a means of forming mental images, is of primary importance in the early years and, in the order of the development of the senses, the sense of touch is the first to appear. Indeed, psychologists have designated this as the substratum of all the other senses. It not only appears early, but it remains with us all through life, for even the adult wishes to touch, hold and handle objects that cannot be grasped through the eye alone. “No, no, mustn’t touch”; “mustn’t handle” ready words in the vocabulary of mothers throughout the land, confront us again in later years on the signs which are placed in

museums, art stores, china shops and fruit stands and read "Hands off", "Please do not touch", "Kindly refrain from handling". Social and business welfare may justify making these demands of the adult, but instead of inhibiting the exercise of so important a sense in the early years, let us provide the child with things that he may touch, handle, take apart, re-arrange, re-assemble and with which he may make something.

*Blocks serve this purpose, as do few other materials, since they may be combined in a thousand different ways without losing their original shape, and may be handled by the littlest ones, possessing little or no hand skill, without fear of waste or injury to the material.*

#### *Childlike Medium of Expression:*

There is nothing that comes within the child's experience too great for him to attempt to reproduce, either in his dramatic play or in his hand work. It is his way of mastering environment. With the right kind of building blocks he is able to reproduce objects in the world about him which he could not reproduce so well in any other way. It is true that he may and does make *pictures* of boats, trains, bridges, houses, furniture, street cars, automobiles, and a thousand other objects which come within his experience, but the picture-making activity must needs remain in the realm of a free and spontaneous expression, since the lack of hand skill on the part of the young child precludes the possibility of developing to any great extent his picture-making interests. Objects may also be reproduced by means of cardboard construction but this involves the processes of cutting, folding, measuring and pasting, and if satisfactory results are to be achieved again calls for a technique that belongs to a later age.

While the *beginnings* of all the manual activities are to be

found in the kindergarten, there are after all only a limited number of things that a five year old child can make without more or less help and direction from the teacher. Beyond the first simple steps there are few possibilities that do not demand more perseverance and skill and definite imagery than a child of this age possesses.

Are we not therefore expecting too much of the kindergarten child both in ideas and technique?

In our hurry to get results do we not begin too early to *direct* his efforts and thus get, prematurely, work which belongs to a later grade? Should we not reserve until later the more definite use of certain of the so-called flexible materials and give more time in the kindergarten to the use of clay, crayons and blocks with which creative results are more easily and quickly obtained?

### *Appeals to Interest in Construction:*

Every child likes to build. The fundamental instinct of self-preservation moves man to provide for himself the primary necessities of life: food, clothing and shelter. It is a far cry from the crude shelter of the cave-man and tent-dweller to the Gothic cathedral of medieval times, and still farther to the fifty-two story skyscraper of today. The history of Architecture shows the development of man's innate desire to construct a home for himself, his family, his possessions and a suitable place for the worship of his God. The child in his play manifests this same inner urge. He too constructs a shelter for himself, and many and varied are the changes it undergoes during the period of childhood. The rendezvous under the dining room table, the protection afforded by a rug over the kitchen chairs, the shelter made of wooden boxes, the cave in the wood, the house in the tree, the dug-out in a neighboring field, the crude shack built by the gang



and finally a den in the attic, all show the expression of this innate desire to build.

If the school is to meet the interests of the child should it not recognize the value of this phase of the constructive instinct and provide a sufficient quantity of the right kind of building material to direct the building interests along worthwhile channels?

*Music and Art. Why not Architecture?:*

Architecture has often been referred to as "frozen music" and is it not true that a great structure of stone and marble, with its rhythm of line, grace of contour and beauty of symmetry may stir the imagination and satisfy the soul of one who has been taught to appreciate good form, quite as much as does the harmony of a great symphony thrill one who has been trained to appreciate good music? Is the beauty of a city not determined in a large measure by the beauty of its architecture? Do nations not express their culture through their architecture as well as through their music, their painting and their literature? Do men not show their taste quite as much by the houses they live in as by the clothes they wear, the food they eat or the books they read? Is *form* not just as much a part of the world in which we live as color, sound or movement?

Are we justified, then, in eliminating one Art from the school curriculum any more than another?

The dancing master would take the child at three years of age; the artist would note his first scribbling and prophesy his future; the musician would have him hear good music as he lies in the cradle and the physician would have training in proper health habits begun in the earliest years. *Is it not equally important that training in the appreciation and love of good form also be given attention in these early years?* May we not through educa-

tive play with building blocks begin to awaken an interest in the principles which underlie all the Arts, among which architecture holds an important place?

*Appeals to Desire for Change:*

A young child is not interested in the fixed, permanent thing. His chief joy is *in the making* of an object and not in the completed result; in the *process of its becoming* rather than in its realization.

Opposed to this is the adult's satisfaction in the achievement, or the attainment of the goal although there is some question, even here, as to whether there may not be a measure of truth in the saying, "There is more joy in pursuit than in possession." The child is interested *in the doing, in the activity for activity's sake* and therefore wishes to change the thing he has made. He wishes either to improve it or to make something entirely different.

The younger the child and the shorter the span of interest, the greater will be the number of things made in a short period of time. With growing maturity, however, and a lengthening of the span of interest a longer time will be spent not in the making of many things but in the perfecting of one. The flexible materials do not lend themselves so readily to this desire for change. The results obtained in painting, cutting and cardboard construction are fixed and permanent. If a mistake is made in cutting, for example, the paper is spoiled and another piece must be used. If, on the other hand, a block is not used correctly in building or if the proportions are not as planned, the mistake may be rectified without waste of material.

*Promotes Social Play:*

The first play with blocks is of the manipulative or experimental type to which reference will be made in a later chapter.

In this, as well as in the earliest stages of his later purposeful play, the child plays by himself, rather rejecting suggestions or help from others and too concerned with his own ideas to bother much about what others are doing. Sooner or later, however, he makes the discovery that as "no man can live unto himself alone," so no child can build unto himself alone. He finds his ideas becoming exhausted; he begins to look about to see what his neighbor is doing and learns that he, too, is making something interesting. Perhaps the neighbor's fence could be made a little higher or his bridge a little longer if the one were to share his blocks with the other and soon we find the two engaged in a coöperative scheme of some proportions. This coöperative play will develop until we find the entire group working for the completion of some large unit of work which calls for a contribution from every one in the group. Examples of this will be found among the later illustrations.

Because of the fascination blocks have for children of all ages the writer feels that more attention should be given to an analysis of the elements that make them of worth as playthings. To this end the following chapter attempts to outline briefly certain standards by means of which one may judge of the relative worth of the various blocks now being offered for sale.

## CHAPTER II

### STANDARDS FOR THE SELECTION OF BUILDING BLOCKS

#### *Lack of Standardization of Materials:*

One of the several factors that have impeded progress in the unification of the kindergarten and first grade has been the lack of standardization of materials. Tradition on the one hand and individual whim or caprice on the other, such as an attempt to embody some mechanical principle or to perfect some one feature that seemed important, have been largely responsible for the great variety of blocks now in use. Opinions, too, as to the *objectives* in block building differ almost as widely as do the blocks themselves.

Aside from the fact that the classroom teacher must provide for large groups of children, the problem of how to judge of the merits of building blocks is the same, whether they are used in the classroom or the home. The following suggestions are offered as possible guides for anyone who has the responsibility of planning for this type of equipment.

#### *Range of Possibilities:*

Too often the purchase of a set of blocks by the layman is governed by the price mark and the attractiveness of the illustrations which accompany the material.

"How much are they"? is the question all too frequently asked of the salesman and many of the so-called cheap blocks on the

market prove to be expensive when considered from a point of view other than that of the dollar.

“What can be done with them?” “For what age child are they suited?” “How long will they be of interest to him?” These are some of the questions to be asked and to answer them intelligently one must note the *shape* of the blocks, the *variety* in both shape and size, the *total number* of blocks and the *relative number* of different kinds. We cannot hope for satisfactory results if children are limited to a meagre amount of material and it is equally important that they be given a *variety* of blocks as well. One can readily appreciate the fact that a box containing many blocks of the same shape and size would not have possibilities for the reproduction of a wide range of objects any more than would a group of persons—all possessing the same talents and ideas—be capable of producing a variety of opinions. A set of blocks is no more interesting nor varied in its possibilities than are the parts composing it, hence one must see to it that there is not only *enough* material, but material of sufficient *variety* to enable the child to reproduce the infinite number of objects that surround him.

Many of the sets of blocks now on the market are excellent for the construction of certain types of forms but there are few that are capable of reproducing many different types or satisfying many different needs. *There are also few sets that have a sufficiently wide range of possibilities to make them equally practical for use in the nursery, kindergarten and first grade.*

### *Progressive Order of Difficulty is Necessary:*

A moving picture of the stages through which a child passes in his play with blocks would present a development somewhat as follows, (1) mere manipulation of material; (2) piling and tak-

ing real pleasure in throwing the pile over; (3) constructing many piles and pushing them together; (4) building forms that give evidence of a dawning purpose or idea; (5) forms that show a definite, although simple, idea; (6) forms that show a decided growth in definiteness of ideas, but a lack of skill in execution; (7) forms that show both clearness of idea and skill in execution; (8) very complete forms that show an interest in the reproduction of rather minute details.

Thus we see the child growing in both muscular and intellectual control of his environment and expressing it by constantly reaching out for more and different materials with which to embody his ideas.

A block equipment then should comprise a sufficiently varied assortment of sizes and shapes to be *progressively* appealing. It should satisfy the desire for mere manipulation as shown by the nursery child and yet stimulate ideas and make possible the realistic reproduction of the details that appeal to the older child. It should also make possible the reproduction of not only the utilitarian forms about him but the decorative elements that appeal to one of aesthetic tastes.

### *Simplicity:*

Reference is here made to the process of construction. Many blocks are held together by means of wooden or steel pegs, brass dowels, bolts or screws or by some means of interlocking in order that the forms may be firm and solid.

Again may it be repeated that little children are not as interested in the fixed, permanent thing as in the making of many things and this is attended with great difficulty when bolts and rods have to be removed in order to free the material for further use. With the slightest warping or shrinking the pegs or

dowels are likely to stick. Children are then inclined to force them in or out with the result that they break or bend. Forms that are held together by the weight and stability of each part and by the perfect fitting of one part with another are much more satisfactory in the end, particularly where there are many children to use them and the blocks are constantly in demand.

### *Mathematical Basis:*

While arithmetic does not *consciously* enter into the play life of young children, they are nevertheless dealing with number in one way or another. Natural situations are constantly arising which afford opportunities for the application of quantitative thinking, such as, counting by ones; recognizing groups of numbers; measuring, comparing and judging with regard to more—less, large—small, long—short, wide—narrow, etc. “He has the biggest piece” and “He has more than I have” show an early recognition and appreciation of quantity.

Number is just as essentially an attribute of an object as is its shape or its color. It is the basis of rhythm, of proportion and hence of all art. The linear and cubic inch have been the race units of measurement for all surfaces and solids. Blocks cut on the inch basis will, therefore, afford *play experiences* with number relations which will lay a foundation for arithmetic and geometry and give meaning to the later mathematical signs and symbols.

It of course costs more to have blocks cut according to the inch measurement, but the added advantage of having them fit with the Froebelian material, with which hundreds of kindergartens are equipped thus eliminating all waste, together with the infinite possibilities for number problems, more than outweighs the initial expense. There is little economy in buying a set of

blocks of dimensions that will not combine with other sets and children become discouraged and soon lose interest in materials if they do not fit.

The success of the building here illustrated has been due mainly to the fact that the large floor blocks used were cut with this idea in mind and, as a result the large, small and medium sized blocks have been combined with absolutely no waste of material.

### *Relative Number of Different Types of Blocks:*

Attention should also be given to the relative number of different types of blocks. It is perfectly obvious that there should be a greater number of the blocks most commonly used and fewer of those that are valuable only as decorative features.

### *Workmanship an Important Factor:*

Cheap material is neither educative nor economical. Clay that crumbles when dry; construction paper that cracks when a clean, firm crease is necessary; drawing paper of poor texture; crayons and paint lacking in pure color; scissors that will not cut and all other imperfect materials are returned to the manufacturer, or at least not purchased the second time.

Do we exercise the same careful judgment in discriminating between good and poor building blocks? Can we get satisfactory results with blocks that are inaccurately cut any more than with imperfect scissors or other tools?

It is for this reason recommendation is made for their purchase from firms dealing in this kind of material rather than from local concerns not equipped to do the work. Building material should be accurately cut according to dimensions, since a variation of even a fraction of one-sixteenth of an inch, when multiplied by several blocks, means a difference great enough to make



a tower fall or the entire building weak and unstable. The children themselves become very critical of poorly cut blocks and are quick to discard those that do not fit. They should be free from cracks, splinters, knot holes and saw marks; they should be carefully sand papered and corners and edges not left too sharp. Soft wood is sometimes selected because it is cheaper and because the blocks are lighter and therefore easier for a child to handle. With the exception of their use by the baby in his first play (mere manipulation on the floor) the heavier block is much more desirable, since it has the added merits of durability and stability, absolute essentials for good construction. Hard wood (preferably clear, white maple) is therefore recommended with the added caution that it be *thoroughly seasoned* to avoid cracking and warping.

Hard wood blocks may be kept clean by frequent washings, and if not allowed to remain in the water long enough to become water soaked, and quickly and thoroughly dried on a radiator or in the hot sun, they will not warp. Thus the problem of hygiene is met.

### *Large versus Small Blocks:*

Most of us will agree that the first definite building by the young child finds expression in forms large enough for his own use, a chair that he can sit on; a boat he can ride in; a bridge he can walk over; a counter he can stand behind; a cupboard that will hold his toys; a platform he can perform on; a shed for his cart or a bed for the doll. (See photographs 11, p. 51; 3, p. 99; 5, p. 102). These forms call for the use of the large floor blocks and it is this type of play that has largely determined the point of view held by certain groups of kindergarten and primary teachers regarding the purpose of blocks.

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There are those who sanction only the large floor blocks, believing that *all* children are primarily interested in those objects which are large enough for personal use. The houses, therefore, must be large enough for the children to furnish and to play in; the stores must be suitable for the dramatization of commercial transactions; the trains must actually carry the children about the room and so on.

Let us not confuse the early individualistic play of the nursery child with this later social-dramatic play of the older child and let us not, because of our interest in either one of these types, lose sight of a third type which is motivated by an interest in the *construction* of the form; an interest in making the boat or train resemble more nearly the one he has seen rather than in the play connected with it.

This interest in *constructive play* grows naturally out of the nursery play and should find its highest application in the later social-dramatic play, but too often the construction is subordinated to the play, thereby failing to perform its function adequately.

The nursery child, for example, is interested not in the construction of the train or boat but in the fact that he has something to ride in and he will ride for days, quite content to be left alone. A little later we find his play becoming more social in character. The interest now is not merely in taking a ride. It is in gathering several of his companions together and investing each one with certain duties and responsibilities. Passengers are coralled; engineer, conductor, brakeman and ticket agent are appointed; baggage and freight are added; stations are named, and the play grows into a miniature replica of a trans-continental journey. Throughout this social-dramatic play (for such it may

be called) the interest is in *train activities* and not in *train construction*.

It is important that a distinction be made between the two for it is this distinction which gives rise to the difference in practice throughout the country.

*Shall the interest remain in the train activities and the blocks continue to be subordinated to the play or shall an interest be stimulated in train construction?*

The answer will depend upon the teacher's interpretation of what comprises the highest type of social play. If she believes that honest, thorough workmanship is essential to right human relations then she will see to it that the children improve their train. The question, "Does it look like a real train?" or "What does it need to make it look more like a real train?" will arouse an interest in a study of the essential characteristics of trains. Immediately we find the attention concentrated upon improving the construction. This will not detract from the play with the train but will, on the other hand, make the play activities more worth while. To be a passenger enjoying a ride or a conductor punching the tickets is fun and an occasional wreck with "nobody seriously injured" is also fun, but this repeated day after day savors too much of the nursery play and cannot be said to be truly educative for boys who are physically and intellectually capable of solving some real problems.

Discussion of the train as one means of transportation; the necessity for having different kinds of trains; the responsibility invested in the engineer and the qualities necessary to assume such responsibility; the need for safety devices and safety regulations such as signal towers and traffic gates; the construction and necessary care of the engine and cars; the duties of brakeman, fireman, switchman, engineer, conductor and so on will lead to an

interest in trains which cannot help but find expression in a better type of construction.

On the other hand, the improved construction creates an interest in further discussion and if one were to analyze, in terms of school subjects, the knowledge gained she would find not only English but the beginnings of geography, science, civics and arithmetic. Blocks are thus seen to have a function of far more significance than the incidental use so often made of them.

If by means of them children are to express and perfect details of construction which their discussion has led them to observe, then it is essential that we have not only a *variety of shapes* but a *variety of sizes* as well.

There has been a tendency throughout the country to eliminate all small materials, including the small blocks, and to substitute the so-called "large materials."

By "small blocks" reference is made to the Froebelian Gifts which comprise one-inch cubes; one-inch cubes cut once and twice diagonally producing triangular blocks of two sizes; oblong blocks 2" x 1" x 1/2", and oblong blocks cut lengthwise and crosswise producing pillars and plinths or long and short square prisms as they are sometimes called.

It is not easy to define what is meant by "large materials." Great variation enters here, hence no such definite dimensions can be given for the large materials as have been given for the small.

Some teachers have gone to the extreme and we find children playing with paper and blocks as much too large as some of the early materials were too small.

Is there not a point where as much, if not more, skill is necessary for the handling of the large as of the smaller material? A child likes to grasp the whole of a thing, both with his hands

and with his eyes and we shall have to admit that it is possible for a thing to be so large that it becomes indefinite; so unwieldy that it produces nerve strain and so heavy that it proves burdensome.

When it comes to the question of large versus small materials, is there not a happy medium between the short, thin crayon and the very large, clumsy one-inch crayon? between the four-inch squares of paper and the very large sheets which are almost unmanageable in the hands of a five-year old? between the one-inch cubes and the floor blocks that in some places approximate real lumber? The writer cannot agree with those who say that children prefer the large blocks. Her observation has been that children who have played with none other than small material will show great eagerness to handle the larger when it is first presented and the reverse is just as true. Where both large and small are in common use, attention and interest are about equally divided. There are many factors which determine the choice of either one or the other. The *purpose* for which the material is to be used will determine its selection—at one time it will be the large, at another time the small, and again it will be a combination of the two. The *type of play*, whether cooperative or individual, may determine the choice of the large versus the small. The amount of *surplus energy* may also be a deciding factor. A strong, healthy boy would be more likely to choose the larger, heavier blocks than would a delicate, frail little girl, and vice versa. It is a question whether the old criticism against the small blocks was not rather meant as a criticism of the *method of use*. Was the child in the formal conservative kindergarten under a nerve strain because he was building with small blocks or because he was building according to the “dictation” of the kindergarten? *Was his restlessness and inattention due to lack of interest in the small blocks or to the fact that he was denied op-*

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*portunity for the expression of his own ideas; that his work lacked motivation and that he was limited to too few rather than too small blocks?*

In view of the fact that children enjoy using the small blocks; that they handle them with ease and skill when used under right conditions; that they serve a purpose which the larger blocks do not serve; that they prepare for the handling of the smaller tool such as the pencil and crayon and that they require little space for storing, are we not justified in including them in our classroom equipment *along with* the larger materials, assuming that the latter are not so extreme in size that they call for a man's strength to handle them?

## CHAPTER III

### A BLOCK EQUIPMENT FOR CLASSROOM AND NURSERY

After years of experimentation with blocks with children of all classes, with training students and with experienced teachers in summer school classes, the writer is submitting two lists of blocks which meet requirements just outlined, namely, Range of possibilities, Variety in shape and size, Relative number of different types of blocks, Simplicity, Durability, Accuracy of workmanship, Mathematical basis, Economical and Progressive in their demands upon the child's growing physical and intellectual powers.

The first list comprises a *minimum* equipment for the classroom and the second, a practical selection for use in the home nursery. The latter is in response to the many inquiries from mothers as to the kind and number of blocks appropriate for young children and places where they may be obtained.

#### MINIMUM EQUIPMENT FOR A CLASSROOM

For a kindergarten or first grade with an approximate average of forty-five children per session the following number and kinds of blocks are necessary if varied and worthwhile results are to be obtained:

*\*Double Enlarged Blocks (for floor use):*

- 50 boards 24"x4"x1"
- 12 boards 16"x4"x1"
- 36 boards 12"x4"x1"
- 18 boards 10"x4"x1"
- 12 boards 8"x4"x1"
- 6 boards 8"x8"x1½"
- 6 boards 20"x8"x1" drilled with 9 holes
- 100 oblong blocks 8"x4"x2"
- 60 square prisms or plinths 4"x4"x2"
- 30 pillars 8"x2"x2"
- 30 square prisms or half pillars 4"x2"x2"
- 60 triangular blocks—4" cubes cut in halves diagonally
- 60 triangular blocks—4" cubes cut in quarters diagonally
- 30 triangular blocks—square prisms 8"x4"x4" cut in halves diagonally
- 6 cylindrical pillars 8"x2"
- 12 discs—3½"x¾" drilled for ⅜" dowel rod
- 6 dowel rods—10½"x⅜" drilled at each end
- 12 arches—cut from oblong blocks 8"x4"x2"

*Enlarged Blocks:*

- |   |   |
|---|---|
| 400 oblong blocks 4"x2"x1"                              | } The equivalent of 24<br>Enlarged Sixth Gifts. |
| 250 square prisms 2"x2"x1"                              |   |
| 150 pillars 4"x1"x1"                                    |   |
| 150 half pillars 2"x1"x1"                               |   |
| 150 triangular blocks—2" cubes cut in halves diagonally |   |

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\* The double enlarged blocks, with the exception of the arches, may be purchased in complete sets or separately in whatever quantity desired. The complete set, called the Trace Building Blocks, and all other blocks recommended for use may be purchased from the Milton Bradley Co., Springfield, Mass.



150 triangular blocks—2" cubes cut in quarters (good but not absolutely essential)

12 arches—cut from oblong blocks 4"x2"x1"

*Small Blocks:*

200 oblong blocks 2"x1"x1½"

Upon first consideration, one might think this a rather extravagant equipment but if different groups of children are building several different forms at the same time one will readily appreciate the need for a large number of blocks. If only ten children are engaged in building at one time and each child is using from ten to twenty blocks it will not take long to deplete the stock.

It will probably be found necessary, as larger projects are undertaken, to add even more blocks of certain types to the list already given. The double enlarged and enlarged oblong blocks seem to be particularly popular.

### MINIMUM EQUIPMENT FOR THE HOME NURSERY

A nest of blocks (see "Permanent Play Materials"—Garrison, p 20)

A box of colored wooden cubes ("Permanent Play Materials"—Garrison, p 20)

20 two-inch cubes

20 enlarged oblong blocks, 4"x2"x1"

12 double enlarged oblong blocks 8"x4"x2"

4 boards 24"x4"x1"

6 boards 12"x4"x1"

2 boards 8"x8"x1½"

2 boards 20"x8"x1"—drilled with nine holes

4 discs 3½"x¾"

4 dowel rods 10½"x⅜"

*Late Nursery and Early Kindergarten Use:*

Since the child from two and one-half to three and one-half years of age is not concerned at first with the details of construction but is interested in merely piling and placing blocks with no end in view other than pleasure in the activity itself, there is little need for a great assortment of blocks in the beginning. The cubes and oblong blocks will meet his desire to pile and arrange, and when combined with the boards will enable him to reproduce the objects in his environment which are beginning to attract him, and which he can use for himself or for his toys, such as table, bed, chair; enclosures with and without roof for the toy animals; the simple boats and trains, all of which have been touched upon in the preceding chapter. More material may be added when the need for it arises. (See Minimum Equipment for the Classroom).

The *later* play of the nursery child does not differ greatly from the *first* play of the kindergarten child, hence the materials for the late nursery and early kindergarten use are practically the same, save in amount. The photographs showing the experimental or first free use of blocks in the kindergarten illustrate the same type of work as might be found in a nursery.

*Facilities for Storing Blocks:*

The problem of accommodating this material in a small classroom where the space is already taken up with seats and desks is of course one that will have to be solved by the individual teacher.

In some schools one room is often equipped as a *block room* and a quantity of material provided which may be used by both kindergarten and first grade children.

The kindergarten rooms usually have facilities for caring for blocks but even here there is wide variation in the practice. The

kindergartens which were established some years ago are quite likely to have more or less of the Froebelian material, especially the blocks that were purchased in individual boxes and called "Gifts."

In an effort to get away from all that might savor of the "traditional" or "formal" or "Froebelian" or "non-progressive" we sometimes find these Gifts, both small and enlarged, either discarded entirely or the contents of the boxes dumped, irrespective of shape, into larger boxes, baskets or hampers from which the children are allowed to help themselves. The arguments presented for this are that the children have a better opportunity to choose the kind of material which meets their needs; that they are not limited to a certain number of blocks and are therefore free to select as many as they wish; and that time and effort are saved in putting them away if they do not have to be sorted out, classified and fitted into small boxes. If we are thinking only of the *nursery* child whose sole interest is in the *mere manipulation* of material then we perhaps are justified in placing before him a basket containing a heterogeneous collection of shapes and sizes as we would place before him a basket of spools or other miscellaneous articles, but if we have in mind respect for material and continuity of progress in its use, then should we not provide the conditions that will encourage it?

As supervisor of over one hundred public school kindergartens, each accommodating from forty to one hundred and fifty children, the writer has had an opportunity to observe the results, as shown by children's reactions to the blocks and the character of the work done with them, of the various experiments in ways of storing this material.

Certain conclusions have been reached which have modified very considerably the original procedure.

We have used large boxes, with and without hinged covers, with handles and ball-bearing casters and approximately four feet long by fifteen inches high and twenty-four inches wide. Our experience has been that when filled with blocks, the weight of these boxes is such as to lead the children in some instances to allow the box to remain at one side of the room while they carry their blocks to and from the place of building. Then, too, when several children are building, the congestion about the box of many waiting for a chance to get their share of the material, is discouraging to some or it leads to crowding and pushing. Perhaps those whose patience endures find at the last moment that the particular blocks needed have already been taken and time has been spent for nothing.

We have experimented with smaller boxes, approximately 30"x18"x12" deep, but we found so many of these boxes were required to accommodate the necessary number of blocks that little space was left for other equipment.

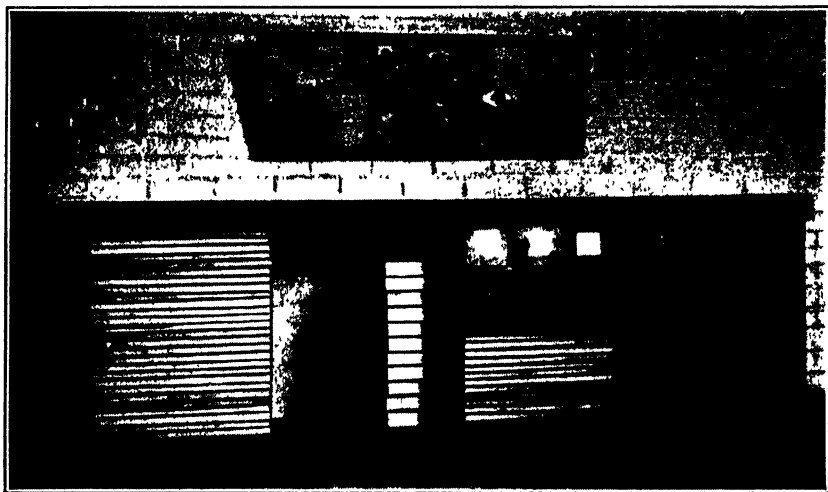
### *Open Shelves:*

The solution of the problem has been in the building of open shelves.

These are made in units of 6' to 8' in length, depending upon the wall space available and are 36" high and 15" deep. There is one shelf which may or may not be adjustable and one partition, primarily for support. From two to three of these units are desirable. The large floor blocks and boards are classified as to shape and size and arranged in them in an orderly fashion.

The child sees at a glance what material is available and makes his choice accordingly. When he has finished his play with it, it is returned to its proper place on the shelf. Upon entering a

kindergarten recently a few days prior to the close of the term, my eyes rested upon a veritable house cleaning. Every block was out of the cupboards and the children were engaged in dusting, washing and re-arranging them on the shelves so they "would look nice when the new children came."



Open Shelves Make Material More Accessible

For the first few weeks of school a daily inspection of these shelves is a part of the program and the "new" children find great satisfaction in keeping them in as good order as they are found.

The question has been raised regarding the sanitary conditions of cupboards without doors. We have found the blocks to be so constantly in use that there is little chance for dust to collect. During the vacation period they are, of course, covered. The facts that materials are so accessible and the cost of construction of open shelves considerably less than that of closed cupboards seem to outweigh any adverse criticism.

*Care of the Small Blocks:*

The small Froebelian blocks have been removed from the boxes and those of the same shape have been placed in ordinary shoe boxes or in heavy cardboard boxes approximately 8"x12"x4" deep. Two or three children working together are thus provided with an ample amount of small material which enables them to add whatever is needed to make their buildings more complete and are thereby saved the time and trouble of opening several small boxes.

*Care of the Enlarged Blocks:*

The enlarged Froebelian blocks are kept in the original boxes but also classified as to shape. For example, some of the boxes are filled entirely with oblong blocks, some with plinths, some with pillars, some with cubes, some with triangular or half cubes and still others with smaller triangular blocks or quarter cubes. Pictures, designating the kind, are pasted on the outside of the box and again we have made it possible for each child to have a greater number of each type of block than he would have if the Gift were kept intact.

Then, too, those who are not ready for the use of pillar, plinth or triangular block are saved the discouragement of handling them too soon. If more oblong blocks than the number contained in the box (approximately twenty-five) are needed, a second or perhaps third box is taken. These boxes are piled on the open shelves where they are within easy reach of the children and afford an easy, safe and economical way of getting material to and from the place where they are to build. Who has not seen little girls carrying blocks in their aprons and skirts and boys with more than they can manage rather than make a second or third trip to the cupboard? In putting the material away there

will be less congestion in one spot because some children will still be piling their blocks in these individual boxes while others will be placing the boxes on the shelves. The boxes, too, are much more readily piled than are the individual blocks. Many teachers prefer to purchase the enlarged Fifth and Sixth Gift blocks in bulk, in which case they are piled in an orderly fashion in the cupboard. One of my teachers conceived the happy idea of using ordinary black tin dripping pans with handles, as a means of carrying them to and from the place of building. These pans cost but ten cents and may be made very attractive, as well as rust proof, by bright colored enamel. The two sizes found to be most practical are 9" x 14" and 9 $\frac{3}{4}$ " x 12". For kindergartens comprising forty-five children per session, eighteen of these pans are sufficient. They may also be used for a variety of purposes other than the carrying of blocks.

I have dwelt at some length on these purely mechanical details because I am convinced that one of the reasons why teachers avoid working with the blocks is dread of the confusion which so frequently results while getting them out or putting them away. This is bound to occur where right working conditions are not provided for in the very beginning.

If habits of neatness and order are to be developed we cannot begin too early to surround the child with all that will encourage their formation. To dump blocks together, irrespective of shape and size, is surely a violation of all laws of order. Respect for material is lost and while time and labor may be conserved in putting it away in this chaotic fashion, both are certainly wasted when it comes to getting it out. Think of having to handle many different blocks before finding the one needed. The good teacher would not think of putting her crayons, lead pencils and paint brushes together in one box even though all might be used in one

period of work. The orderly cook would have her knives, forks and spoons in separate compartments; a carpenter would have his tools in places designed for them in his box; and a librarian would not fail to have her books classified. Are the blocks of so little importance that we can afford to heap them in baskets and set them away in some obscure corner?

Since the open shelves have been provided, and the blocks placed within sight and reach of the children, teachers have reported a marked increase in interest and enthusiasm for this type of play material. It is surely a demonstration of good psychology when a teacher so plans the arrangement of her materials that at first glance the child is impelled to play with them.



## CHAPTER IV

### THE METHOD OF USE

#### *Is There a Place for Technique in Block Building?*

Doubtless there are some persons who will gasp at the thought of "technique" in connection with blocks but how else can growth in their use be assured? Does not the mastery of any material or subject matter call for a certain amount of training in technique? Call it drill, if you choose, or learning the mechanics of a subject, or obeying the laws of the material. In the final analysis does it not mean that there are certain fundamental facts and principles with which we must be familiar before we arrive at any true knowledge of the possibilities of the subject matter or material with which we are dealing? Is it not also true that the highest type of self-expression depends upon the mastery of these principles? Even the genius will study with a great master in order to perfect his technique. And why perfect his technique unless it is that he may have a more adequate means of self-expression?

Note the gesture of the little child as one of the first means of making his wants known. Were it possible for him to completely express his needs by means of gesture alone would there be any necessity for a more adequate language? Through continued progressive mastery of *technique* we find him substituting the word for the gesture, then the partial and later the complete sentence for the single word, and finally, achieving a more or less fluent and artistic use of the spoken language.

The ex-president of one of our great universities made the statement in a recent lecture that "One of the universal perils of society is the desire to do work and accept duties for which one is only half fitted. Everyone is over-anxious to get results without being willing to undertake the drudgery of work required to achieve success." "There is no royal road to learning." Modern education would not eliminate the mechanics or the technique of a subject nor would it have them touched upon hurriedly, in an effort to arrive at some finished result that will make a clever showing, but it would approach their mastery from a different angle.

All curricula dealing with school subjects show progressive steps from the simplest beginnings. While everyone may not agree as to the specific method or methods to be used in teaching these subjects—for example, reading, spelling or arithmetic—there will be consistent endeavor to adhere to some kind of progression from the more elementary facts and principles to the more difficult.

Some years ago in beginning reading it was considered good pedagogy to stress first the alphabet, then phonics, then word drill and later, sentence construction. The idea embodied or the thought therein expressed came as a by-product. In the modern first grades of today the procedure is quite different. Children live through interesting and worth while experiences. They discuss them with each other and with the teacher and a motive for reading and writing is aroused. The thought, or the idea, is the important thing, then its expression, with only as much drill on the mechanics as is necessary to meet the specific problem of the moment. Instead of beginning with the small unit and working up to the larger, the process is reversed. Language is merely a tool and the subtleties of its use are to be

subordinated to the larger and more important aspect of reading which is the thought to be expressed.

"A felt need" for a thing, be it the meaning of a new word or the sound of a letter in reading, a symbol in arithmetic, the sewing of a seam, or the sawing of a piece of wood will determine the interest in the technique and the degree of interest and resultant satisfaction will determine the degree of learning. The technique then grows out of an interest in the subject matter and the mechanics are studied in connection with the immediate situation instead of being studied as a thing apart with the expectation that they will be utilized when the situation arises.

But what has this to do with block building? A change in procedure, not unlike that in reading, has taken place in the work with the blocks and the increased interest, satisfaction and worthwhileness of results prove the wisdom of the change. Instead of giving a child a limited number of blocks and stressing the technique of their use thus making them an end in themselves, he is allowed to choose as many blocks of the same or of different kinds as he wishes and to use them to express whatever *idea* he has in mind. The blocks are simply a means to an end or mere tools of expression and the mechanics necessary for their mastery will be stressed only as "felt needs" arise in connection with the expression of the idea.

In order to measure results in reading it is essential that teachers understand the proper use of the standard vocabulary and that they be familiar with the words most commonly used. If they are good teachers of reading it is assumed that they have classified and stored away in their consciousness for future recall the various principles and devices necessary to help children to acquire new words, to apply the use of words already learned, to correct errors and to stimulate further reading interests.

It is just as essential that there be an understanding of the proper use of *form* and a familiarity with the combinations of blocks most commonly used in order to measure the results in building. It is therefore the purpose of later chapters to so organize the procedure with the blocks that the teacher may be helped to classify and store away in her consciousness, ready for use, a working knowledge of their possibilities. Without this knowledge she can lead the child no farther than he can go by himself unaided and the work ceases to be educative.

*Teacher and Child Must Work Together:*

The same principle which governs procedure in other phases of the curriculum should apply in block building. It matters little whether we describe this as \* "The Child's Part" and "The Teacher's Part," as † "Undirected, Directed and Self-Directed Play," as ‡ "The Principle of Interaction," or as § "The Rôle of the Teacher." Each leads us to practically the same conclusion, namely, that the child is to be given an opportunity to choose his material, to make his own discoveries as to its possibilities, to initiate his own problems and to plan and to execute his plan for their solution in his own way. So long as this procedure tends toward progressive development and there is evidence of increased physical and intellectual control, he is left to himself. Just so soon, however, as there is evidence that it has reached its maximum development, the teacher, with her understanding of the child's needs and her knowledge of what can and should be done with the material, helps him to a discovery of added possibilities. The satisfaction resulting from this discovery stirs his ambition and stim-

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\* Burke, "A Conduct Curriculum for the Kindergarten and First Grade." p. 11.

† Harrison, Elizabeth, "The Kindergarten Building Gifts." end of each chapter.

‡ Fulmer, Grace, "The Use of the Kindergarten Gifts." Chapter I.

§ Hosic-Chase, "Brief Guide to the Project Method." pp. 26-48.

ulates him to further effort. The process continues and the child grows in his ability to attack new problems, to adapt himself more skilfully and intelligently to new situations, to "react more consciously to his ever widening environment" and thus higher levels of thought and skill are attained.

This Process of Interaction between the teacher and child and child and his materials may be seen to comprise three definite stages: (1) Experimental or Free Building, (2) Directed Building, and (3) Self-Directed or Creative Building.

These are not distinct or separate steps. While any one of the three may predominate at certain times, depending upon the age of the child and the number of times he has played with the materials, all three may be present in one period of work. For the sake of clearness, however, let us consider each stage more in detail.

### *Experimental or Free Building:*

This is the child's opportunity to do what he can without help.

(1) He may be interested in the mere manipulation of material. This may take the form of repeating over and over again the piling or the simplest arrangements with a very few blocks or it may mean an accumulation of a great amount of material with no particular object in view other than to have many blocks. Children deprived of playthings at home often show their starved experience in this way. (See photographs 1, p. 45; 2, p. 46).

(2) He may have a desire to reproduce some definite experience which has come to him from his immediate environment, from the suggestion of the teacher, or from other children. Never having played with the blocks his results will be crude but the child cares not for this since his interest is in the idea. To stress the principles of construction at this time, that is, the manner of

handling the blocks, the number, kind and size to be used, the way they should be placed and perhaps other mechanical details would crush the spirit of the play.

Sooner or later, however, we find his interest beginning to wane. He has come upon some problem or limit and the observant teacher notes the first signs of a "felt need" for help. She sees that he is clumsy or is altogether lacking in hand skill; that he does not know how to fit certain blocks together; that he is confused by too great an amount of material; that he is lacking in judgment as to which blocks best serve a certain purpose; that he lacks ideas; that his mental images are not clearly defined or that his ideas are too definite for the meagre material he has at his command; that he lacks confidence and independence or is a born leader and tends to direct others too much; in short, the moment has arrived for tactful intervention on her part and we thus make the transition from the Experimental to some phase of Directed Building.

### *Directed Building:*

Through the association with the old and much abused method of "Dictation," which in the early days meant telling the child *what* to do and *how* to do it, many have developed an aversion to any form of direction. Children are allowed to play freely with their materials and whatever possibilities are not discovered by them are left undiscovered. It is because they are so often not inspired or encouraged by teacher direction to improve upon their efforts that so much of the play with blocks appears to be without purpose and a waste of time and money.

Dictation and direction must not be confused. The one is an enslaving and the other a freeing process. The method of directing a child's play may be very simple or more or less complex. It

may mean merely a word of approval to restore the waning confidence of some discouraged child, a simple suggestion for the improvement of a form, or the planning of some *definite work* emphasizing a way to meet some of the limitations discovered in the experimental play. It may be for the individual or for a group of several in need of the same help. *If given wisely and at the opportune moment, directed building will make for a higher type of creative expression than that found in the experimental or first free building.* In order to make a distinction between the free building which precedes Directed Building and the free building which follows it, the term *Self-Directed* or *Creative Building* is used.

### *Self-Directed Building:*

This is the highest type of creative building. It results from the knowledge acquired from the discoveries the child makes for himself in his first Free or Experimental Building plus the added help given by the teacher in Directed Building.

The child is now conscious of certain underlying principles of construction and works not only with a definite purpose in mind but with definite ideas as to ways and means of realizing his purpose. The term Self-Directed may refer to a point of creativity reached in any one lesson or it may describe the character of the later work that one should find in every good classroom.

### *Should Children Have Access to All Types of Blocks in Their First Experimental Building?*

It is a question whether children entering the kindergarten for the first time should be allowed free choice of *all* the different types of blocks. Much will depend upon the number of children, the environment from which they come, and whether they have been accustomed to the use of varied playthings at home.

Some of the blocks are more difficult to handle and require more time to put away and the many demands upon a teacher during the opening days may prevent her from properly supervising the care of this material. For these reasons it might be well to reserve the use of some blocks until later, or until sufficient hand skill and a sense of order have been developed as well as the feeling of need for the more advanced shapes.

I would suggest that the double enlarged oblong blocks, the boards of various dimensions, the enlarged cubes and oblong blocks and the discs be placed within the child's reach and that he be made to feel free to help himself to as many as he cares to use. The double enlarged and enlarged pillars, half pillars, plinths, triangular blocks, arches, and all of the small blocks might be introduced later and gradually as a stimulus to further creative work.

### *First Confusion a Step Toward Order:*

To the kindergartener trained in the old method of having all the children in the group playing with the same kind of blocks and making the same thing in the same way at the same time, the first experimental play will savor of chaos and she may have some difficulty in meeting the various problems that arise. Unless children are given an opportunity to work and to express themselves freely and unless the situations which are bound to arise in the home when several are playing together are allowed to arise in the classroom also, the teacher is deprived of one of her best means for studying the natural reactions of her group not only to the materials but to their playmates and surroundings. There will be some confusion of course, but how much more meaningful and lasting will be the order which comes from chaotic conditions as a result of children learning how to adapt them-



selves to certain conditions than the external type of order which exists by virtue of the watchful eye of the teacher or the influence of a dominating personality.

Children should be provided with situations in which they may learn to play fair and unselfishly; to be congenial partners in getting and putting away material; to exercise self-control and to be participants in the regulating of affairs rather than to be thrust into a smoothly running organization which too often means the absence of a natural childlike atmosphere.

### *How Long Shall Experimental Play Last?*

No definite answer can be given to this question. Children who have never played with blocks must have ample time to satisfy their curiosity and to repeat over and over again their simple, crude constructions. Children teeming with ideas must have time to work them out, hence the teacher will have to use her judgment as to when it is wise for her to interrupt their play or to direct it along other channels. If she is a skilful teacher, she will be quick to see whether or not the repetitions of the younger child are resulting in skill or control of ideas and whether the apparent creative expressions of the older child are indications of progressive growth in effort and achievement for him.

### *Value to the Teacher:*

Observation of experimental play should serve as a basis for grouping the children according to their ability. The teacher is then able to plan the type of work best suited to the needs of each group.

Skill in handling the blocks, ability to express ideas through form, and creative imagination on the part of one or two children does not insure a readiness on the part of all the children

for a particular problem, therefore the superior few may continue to work creatively with many different blocks (see photograph 12, p. 51) while another group, of perhaps lesser ability, will be playing freely with the more simple material which is on the level of their mental and physical skill. Some will be able to make good use of different sizes of oblong blocks in combination with boards of different dimensions (photograph 11, p. 51) while others will be satisfied to make simple enclosures with oblong blocks of uniform size or perhaps will still be in the stage of mere manipulation of material (photographs 1, p. 45 and 3, p. 97).

The teacher will have to use her judgment as to the best time to encourage the use of new materials or to stress *new combinations of old materials*.

### *A Word of Caution:*

The question of the relative importance of the Experimental or Free Building and Directed Building is significant and needs careful consideration. It gives rise to two ever-present dangers particularly for the young and inexperienced teacher.\* 1. The fear that she may domineer or over-direct the child's play and thus crush his free spontaneous expression, moves her to allow him to remain too long in the stage of Experimental Play. 2. The lack of ability to interpret the child's meagre, indefinite and often meaningless reactions or to see in his crude results a promise of future achievement moves her to impose her mature ideals and standards upon him before he is ready to appreciate or understand their meaning. Either danger is sufficiently serious in its effect to permit of further discussion.

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\* Fulmer, Grace, "The Use of the Kindergarten Gifts," p. 19.

*Dangers Resulting from Too Prolonged Experimental Building*

1. If children are allowed too much freedom in the choice and use of material, there is a tendency on the part of some to develop to an undesirable degree a spirit of self-assertiveness. They become a "law unto themselves" and are unwilling to follow the directions given by another or to subordinate themselves to the group, thereby failing to develop one of the important qualifications for leadership.

2. Children lacking ideas have no basis on which to build and therefore make no progress.

3. If left without direction or guidance children will miss some of the possibilities of the material which they are capable of appreciating and utilizing but which they may not discover for themselves, hence will be denied the richness of a varied experience.

4. Unless they are naturally creative, some children will repeat over and over again past achievements, so time will be wasted and progress, if any, will be slow.

5. There will be a tendency to be satisfied with results that do not call forth their best efforts, therefore a growing laxity, a lack of thoroughness and loss of respect for material.

6. Children will be governed by impulse or the interest of the moment, and thus denied the growth which comes from the exercise of effort directed toward a definite goal. A desirable end in view always demands one's best thought and effort and young children need stimulation and guidance toward the attainment of desirable ends.

*Dangers Resulting from Too Little Experimentation or Over-Emphasis of Directed Building*

1. Children find their greatest joy in the exercise of their own powers. Their interest and enthusiasm will wane if they are constantly being called upon to follow the directions or carry out the wishes of another. The child as well as the adult chafes under frequent and long continued restrictions and longs for the freedom of self-expression.

2. Denied the opportunity of investigating, and of experiencing the joy which comes with the making of a new discovery, they become like birds with broken wings and cease to fly. They lose all initiative and creative ability and either develop the passive contentment of the blind, mechanical follower or, rising in revolt when the yoke becomes too oppressive, become the anarchists and violators of the law.

3. Not having the opportunity in their play life to form the habit of meeting independently new situations they become helpless in later years when confronted with new problems and depend upon others for directions.

4. If constantly subject to the directions of another, the child loses confidence in his own power and with loss of confidence comes loss, also, of initiative, independence, and hence, leadership.

5. It is through her observations of the child in his experimental play that the teacher learns of his interests, his ability, his power to attack new problems, his degree of initiative, his power of concentration and perseverance, and his emotional attitude, therefore if she were to eliminate this type of play she would, at the same time, deny herself one of her most valuable means of becoming acquainted with "the child, his nature and his needs."

*A Balance Between Experimental and Directed Building Must Be Kept*

If, then, the child is to develop the qualities of a good citizen, yielding and yet unswerving in matters of principle; ability to initiate, to act with freedom and independence and yet follow the dictates of another; ability to lead and yet subordinate himself to the group; ability to choose and yet accept graciously the choice made for him by another; develop a sense of curiosity and yet sufficient control to prevent its deterioration into meddling with affairs not his own; obedience to the right and yet with courage to resent and resist unwise and unintelligent authority; we must provide play experiences which will develop and at the same time reconcile these seemingly opposing forces. *There should be sufficient opportunity given for the free exercise of his creative powers and at the same time enough guidance and direction to prevent waste of time, dissipation of energy and failure to reach any desirable goal.*

Both are necessary in a real Democracy—the underlying principle of which is “Freedom under Law.”

## CHAPTER V

### PHOTOGRAPHS SHOWING VARIOUS STAGES IN THE DEVELOPMENT OF EXPERIMENTAL BUILDING

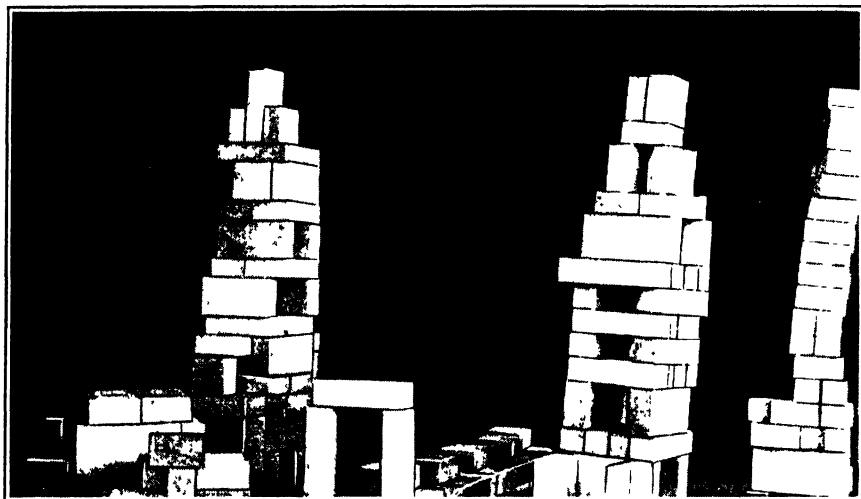
The photographs on the following pages show play with blocks prior to any form of direction as to their use.

The reader will note the various stages of development ranging from the mere accumulation of material and crude piling to the more or less definite expression of an idea. The definite work is of course the work of more mature children and shows a readiness for some real problems. It perhaps savors more nearly of the Self-Directed play in that such results are a natural outgrowth of some previous experiences on the part of the children. They are included in the illustrations of Experimental Play since they were not the result of any teacher direction.

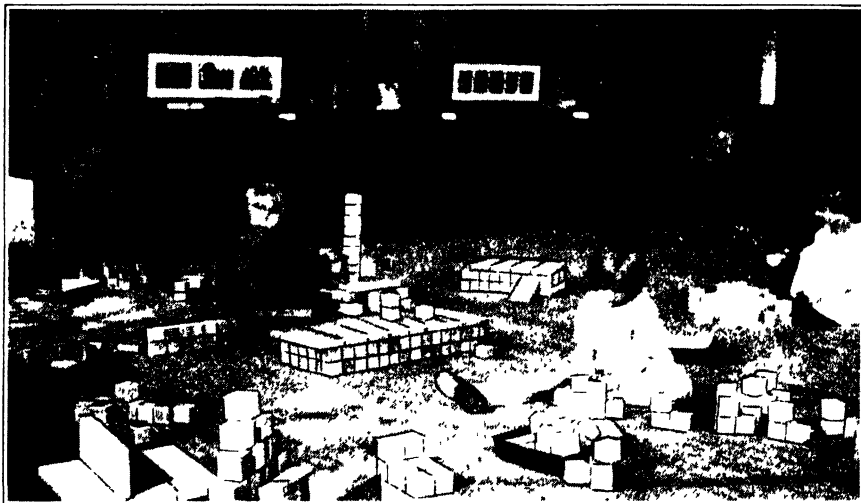


1. Mere Manipulation of Blocks by a Four-year Old.

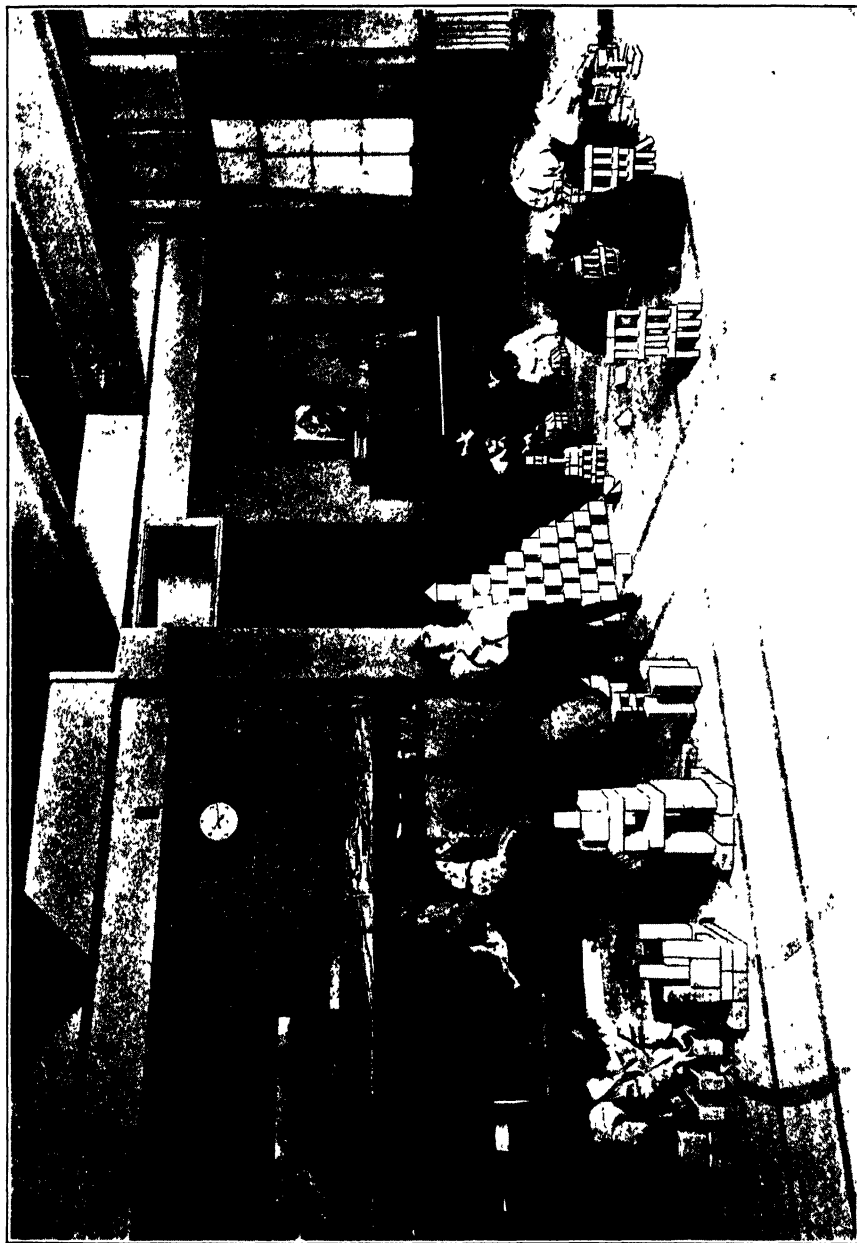
## BLOCK BUILDING



2. Crude Piling

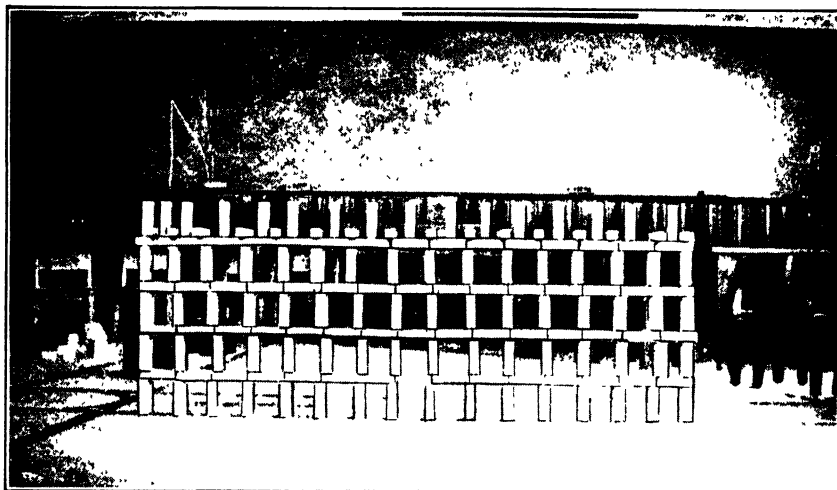


3 Cubes Continue to Satisfy Some Children—Others Find that Boards Lend a New Interest.

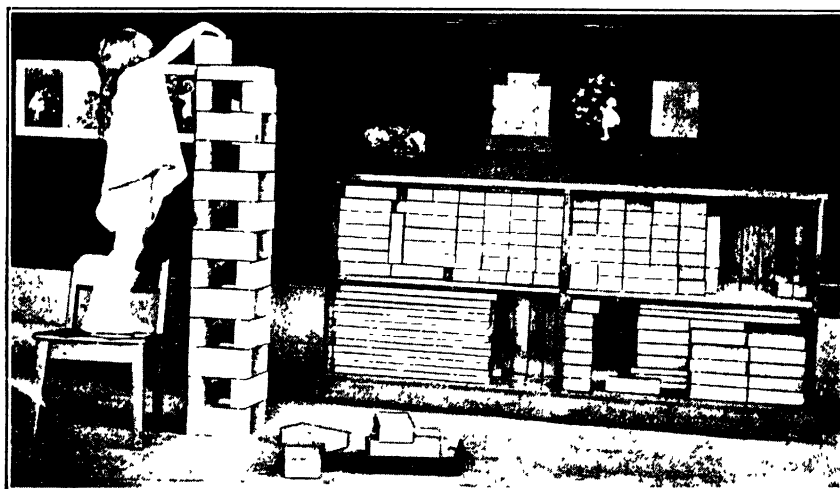


1 More Definite Piling—Ideas as Compelling Factors Beginning to Emerge





5. Simple Repetition Appeals as Long as the Material Holds Out.



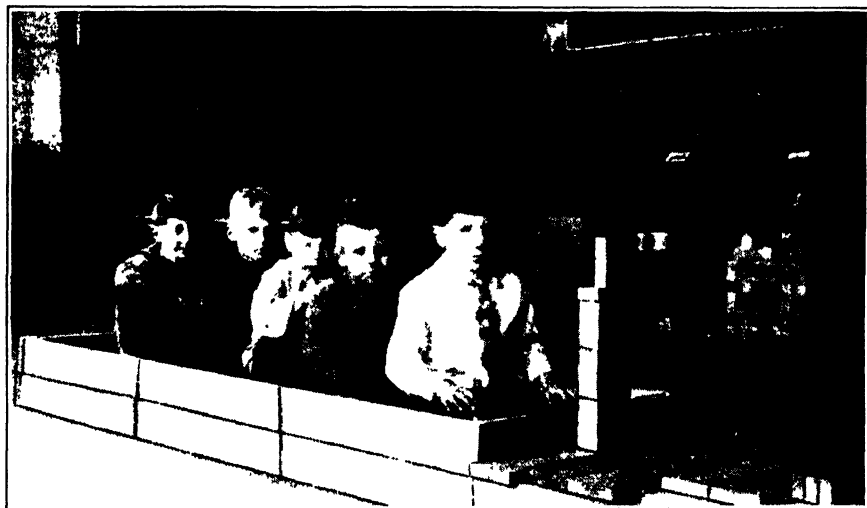
6. Showing a Definite Idea and Skill in Execution.

Our baby likes to have me build  
 A tower very tall,  
 So she can push it over,  
 She laughs to see it fall!

But when I wish to build with blocks  
 And make things I can keep,  
 I wait till baby sister  
 Lies in her crib asleep! D. P.



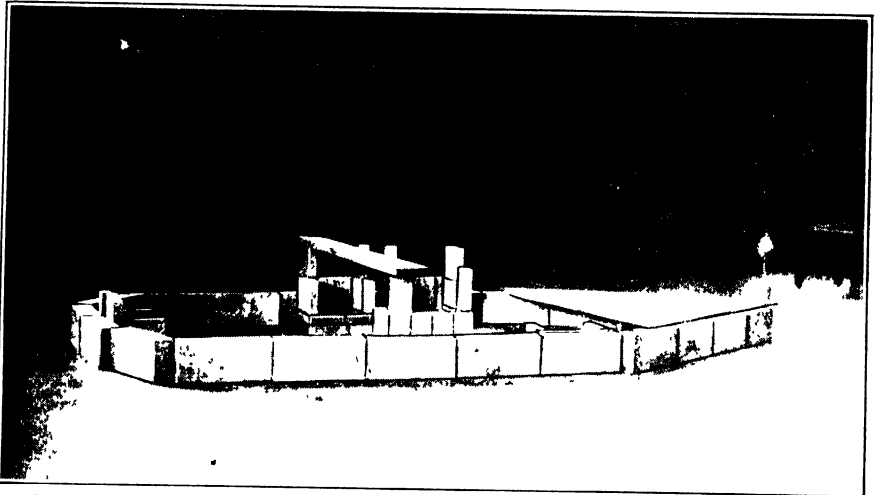
7. Children in the Piling Stage Uninfluenced by the Work of Older Children



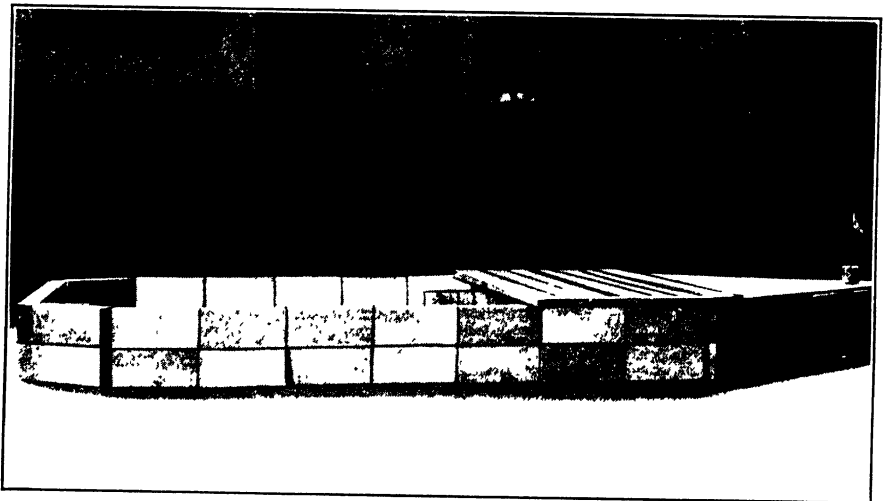
8. Where shall we adventure, to-day that we're afloat  
Shall it be to Africa, a-steering of the boat?

—Robert Louis Stevenson

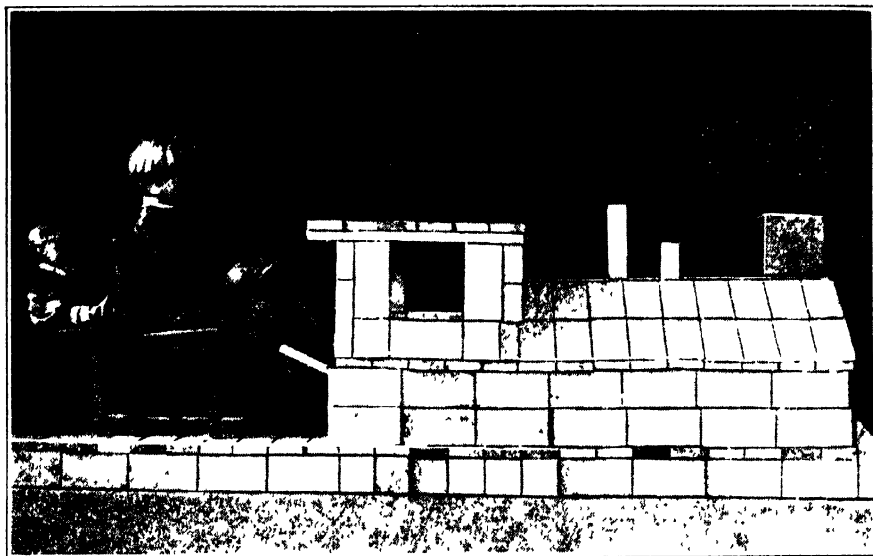
## BLOCK BUILDING



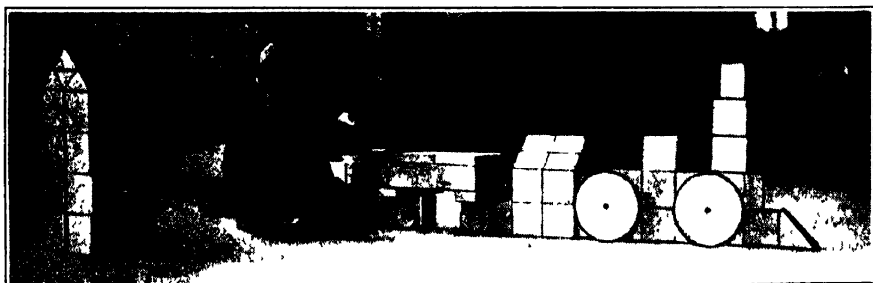
- 9 Interest in Construction Beginning to Develop The selection of an odd board for the prow of the boat shows a feeling for "adaptability of form to use." The boats which appear on later pages had their origin in this crude form.



10. The Boat Idea Lasted for Several Days.



11. The Younger Child is Interested in Taking a Ride.



12 The Older Child is Interested in "Construction "

## BLOCK BUILDING



13 A Double-Deck Bus of His Own Construction



14. The store was without teacher direction—the counters were a repetition of former work

## CHAPTER VI

### DIRECTED BUILDING AS A MEANS FOR OBTAINING CREATIVE BUILDING

#### *Growth Toward Complexity is Gradual:*

To those who have never experimented with blocks, the later illustrations in this book may seem to be quite outside the realm of children's abilities.

There will be those who will doubt, perhaps, that children ever would or could make some of the forms here pictured, but if one is sufficiently interested to follow the procedure through the various steps from the first simple nursery play—with a few blocks—to the more realistic forms made with many blocks by older children, by students in training and also by experienced teachers, they will realize that results have been obtained in much the same way as they are obtained in reading, arithmetic, music, art or in any other school subject.

The skill gained in the mastery of the first simple problems applied in the solution of problems slightly more difficult and the power thus gained utilized in still further mastery leads to an ever increasing ability to express ideas through form. Definite and carefully thought out plans are just as essential in block building as in the use of any other medium of expression if anything of educational value is to be attained. The work outlined in this chapter shows a definitely organized procedure, based upon the belief that if little children are to find joy in the expression of ideas through building, *they must first of all have*

*attained a fair degree of skill in the mere handling of the blocks in order that their attention may later be concentrated upon the idea.*

Assuming that this mastery has been gained in the Experimental Building, emphasis will now be placed upon certain fundamental constructive principles which the teacher is to have in mind and which she will employ as a means of leading children into a more purposeful use of their material than that shown in their first free building.

The order in which the different blocks are here used is the one which, in general, has afforded the best results, both from the standpoint of development in physical control and growth in the ability to originate and express ideas.

With the children this outline may be used somewhat as the dictionary is used when a certain word is needed. One does not have to look through all the A's and B's to find a word beginning with C, neither is it necessary for some children to go through all the steps of using cubes alone, then cubes and boards, then oblong blocks and so on. If they are building a house and recognize that the triangular blocks will make a more satisfactory roof, they should be allowed to use them since this would be using material in response to a "felt need." If in so doing, however, they find difficulty in combining these blocks as they would like to, in order to express their ideas, the teacher may find suggestions in the chapter dealing with triangular blocks that will help them over the hard places. The amount of individual and group drill will be determined by the nature of the difficulties.

*It is because the average teacher does not have time to work with blocks as long as she should to discover for herself their possibilities that this outline is suggested.* It is intended only as

a guide for those who, like the children, are ready to appreciate but perhaps not able to create. For the imaginative and at the same time logically minded person it will, of course, be unnecessary for she will fashion her own plan and imbue it with her own creative spirit which is a thousand times more to be desired than the literal following of any plan conceived by another.

The photographs following the suggestions for the directed use of each type of block will show the constructive principles as applied in the work of both children and adult students.

### DIRECTED USE OF CUBES

Cubes have not been included in the initial equipment for the kindergarten and first grade. After they have been piled a number of times and a few simple forms have been made, the five-year-old child of normal intelligence will find them too limited in possibilities and will show a decided preference for the oblong blocks. Unless the supply of the latter becomes exhausted he seldom returns to the play with cubes. Occasionally a few may be needed for a particular purpose in which case the plinths may be substituted.

The child of three or four years, however, and even the *immature* five-year-old will take great pleasure in the piling and placing of this simple form, particularly if there are enough to allow of much repetition. The child of this age is more interested in the *amount* of material than in the difference in form. (See photograph 7, p. 49). The Froebelian Third Gift comprising only eight one-inch cubes was lacking in this respect and the mother or kindergartner would have to add little rhymes and verses to compensate for the limited number of interesting combinations.

The reader must not infer from this that rhymes and verses



are not to function in this play. They are invaluable in that they add meaning to the form and through the association of the spoken word with the object made, the vocabulary is enriched. To use either rhyme or verse as a means of making an already interesting thing more interesting or to give added meaning to an activity which in itself is satisfying to the child, is quite different from relying upon it as a means of putting life and meaning into something which, for the child, is lacking in meaning.

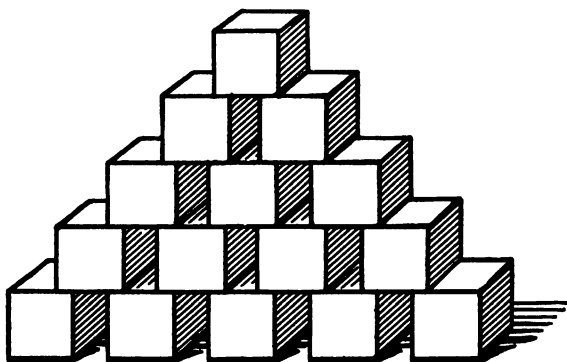
The latter is a formal, artificial procedure of no value other than entertainment for the moment. For example, in the days when play with blocks was confined to the use of the Froebelian Gifts and the unity of each gift was to be preserved, the young teacher would often create a series of forms with as limited a number of blocks as the previously mentioned eight cubes of the Third Gift. Perhaps these forms would have no meaning whatsoever for the child since they were "teacher made" and were in no way related to the child's experience. In order to make them appealing the teacher would describe them in clever rhyme. The child's interest would be caught for the time being, but too often it would be an interest in the sound of the voice, in the facial expression, in the enthusiasm of a magnetic personality rather than in the blocks themselves. There was "no leading on" into creative effort on the part of the child himself, hence this kind of play was of little if any educative value. Today the procedure is quite different. Many blocks are used in the construction of forms which are a part of a large social unit. Rhymes and verses are learned but their purpose is not to compensate for the absence of meaning but to add to or enrich the meaning already expressed by the child in a form he himself has made.

For an able discussion of the principles underlying the use of the cubes, as well as other blocks, I refer the reader to Chapter

III in "The Use of the Kindergarten Gifts" by Miss Grace Fulmer. She here explains how "The cubes become a normal stimulus through which instinctive curiosity may develop into an intellectual interest" and how "the idea growing out of one activity controls the next, and thus makes more conscious and intelligent each succeeding activity."

The following practical suggestions for the use of cubes may be of help to the mother and to the teacher in the nursery school. It is to be assumed that ample opportunity has been given for experimental play with many cubes and that the child, having exhausted his ideas, is on the verge of losing interest. A word of approval, a suggestion of additional things to make, or perhaps a form made by the mother or teacher for the child to imitate will be sufficient to renew his waning interest.

*Piling the Cubes:* This is one of the first things little children will do.



A Favorite Way of Piling

They will build piles ranging from two or three blocks high to piles ten, twelve and twenty blocks high; piles at first inaccurately then accurately built; piles built for the fun of throwing them over and piles built with some definite construc-

tive idea in mind, such as a flag pole or a telegraph pole. These will be built spontaneously again and again until great skill and accuracy of balance have developed. So long as the child is interested do not interrupt his play but when there is evidence that

he has exhausted his ideas the mother or nurse should be ready either to add additional blocks or to offer suggestions for the use of those he already has.

Simple little problems that will involve speed, a difference in the position of the blocks, number, or perhaps a combination of all three will prolong his play. For example, "See if you can pile your blocks while I count for you," gradually increasing the rapidity with which you count; or "Let us place two cubes and leave a space and then two more and a space," and so on thus.



A little rhyme for the piling of cubes similar to the following may have a two-fold value. It may help the child to gain better physical control by performing the activity as the word describes it without losing the rhythm of the lines and it will also teach him to count.

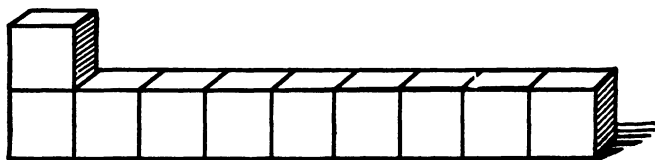
One block up,  
Two blocks up,  
Three blocks up, you see;  
Four blocks up,  
Five blocks up,  
Six blocks now there'll be;  
Seven blocks up,  
Eight blocks up,  
Now we've reached the top—  
One, two, three, four, five,  
six, seven,  
On eight we'll have to stop.



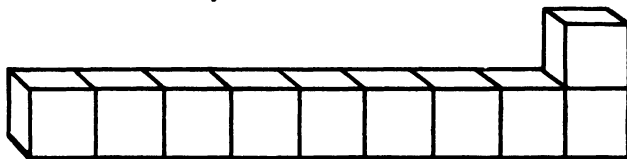
One block down,  
Two blocks down,  
Three blocks down, you see;  
Four blocks down,  
Five blocks down,  
Six blocks down, there'll be;  
Seven blocks down,  
Eight blocks down,  
Now place them in a row—  
One, two, three, four, five, six, seven,  
Eight blocks placed just so.

One of the simple forms in which every young child takes great delight is the *train*. They never cease to enjoy pushing it along the table or on the floor, calling out the stations and loading and unloading the make-believe freight. The following little rhyme will add to the joy and at the same time furnish additional new words. It will also call for quick movement, if as you finish saying the word "forward" the smoke stack is changed from the cube on the left to the cube on the right, and the train moved without loss of rhythm:

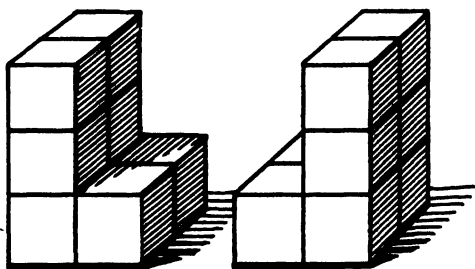
I have a little train  
But I haven't any track,  
My train runs forward  
And then it runs back!



My train runs forward



And then it runs back

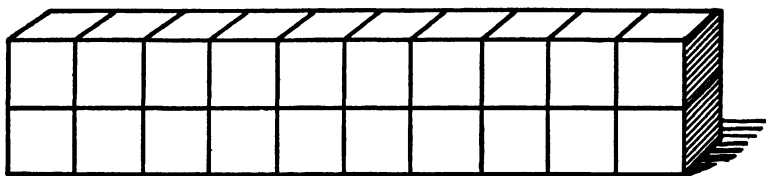


Two Chairs.

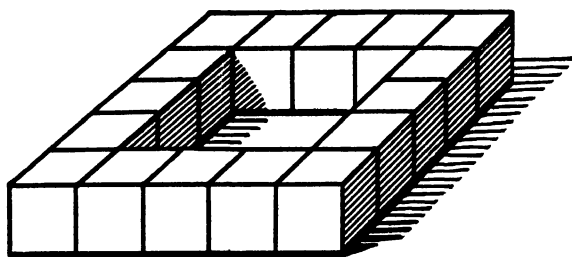
*Simple Forms Repeated:*  
With the twenty cubes suggested for home use, the following simple forms may be made: *two chairs, two beds, two tall posts, two benches, two tables, two trains, etc.* Interest is deepened and

skill of hand developed with every repetition.

*Making Forms Larger:* The preceding forms may also be enlarged and creativity begins to show itself not only in the making of *many* things but in making the one thing a little different, in this case the difference being that of *size* only. The chairs, beds and tables are larger, the posts are higher, the train is longer, the enclosure is larger.



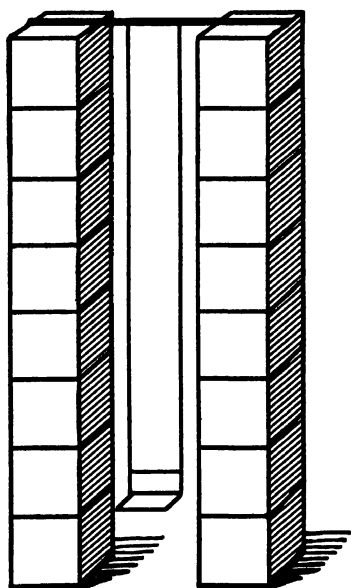
Long Wall.



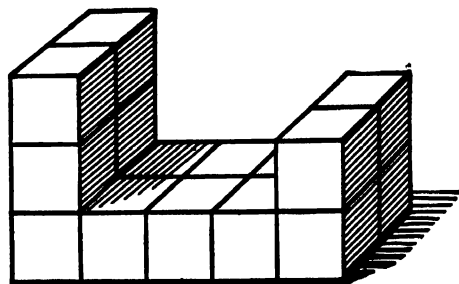
Enclosure.

Play with any of these forms will continue for a longer time if additional materials are added—dolls to sit on the chairs and lie in the beds; a swing made by placing a stick across the tops of the

two tall posts, adding string for the ropes and a bit of cardboard for the seat; a cloth and tiny dishes for the table; something to suggest freight or passengers for the train. If, however, the child's imagination clothes the form with meaning and he is satisfied without the addition of these accessories, then it would be unwise to force the realism. Let us be careful not to crush the imaginary play that is full of things not present to the senses. *The world needs poets as well as scientists.*

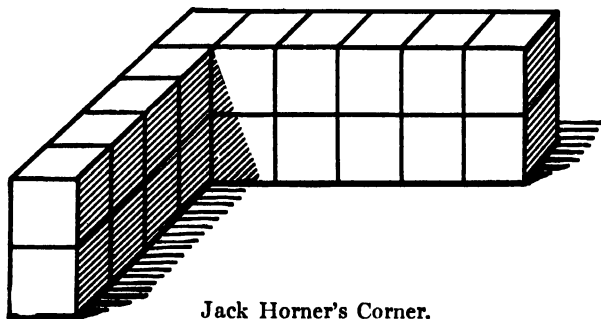


Swing.



Bed.

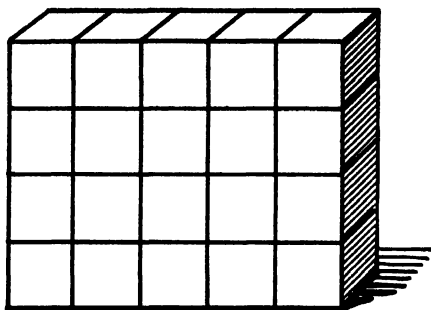
*Nursery Rhymes:* About this time the nursery rhyme is making its appeal and the interest in both the rhyme and the blocks will be enhanced if the two are used together.



Jack Horner's Corner.

Little Jack Horner  
Sat in a corner  
Eating a Christmas pie:  
He put in his thumb  
And pulled out a plum  
And said, "What a good  
boy am I."

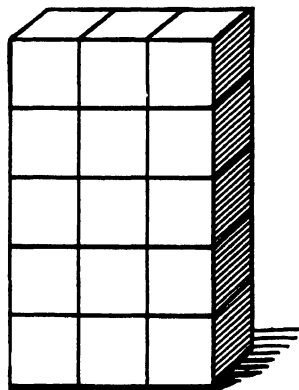
## BLOCK BUILDING



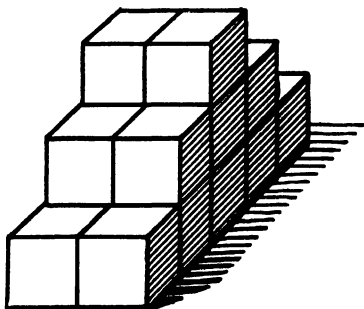
Humpty Dumpty's Wall.

Humpty Dumpty sat on a wall  
 Humpty Dumpty had a great fall;  
 All the King's horses and all the King's  
     men  
 Couldn't put Humpty together again.

Old Mother Hubbard  
 Went to her cupboard  
 To get her poor dog a bone,  
 But when she got there  
 The cupboard was bare  
 And so the poor dog had none.



Cupboard



Stile

"The Old Woman and Her Pig"

*Sense Training:* There is great fun in learning to see things as they really are—in other words, developing the power of observation or visual recognition. The child may watch while a form is being built, after which it may be covered or taken down. He is then asked to make it from memory. This may be made more difficult by having two or more forms which have previously been built, uncovered and a few moments allowed for careful observation of them. They are then covered and the child asked to make one from memory.

The preceding are little devices to be used with the cubes as one way of developing, not only hand skill and the ability to express ideas by means of form but as a means of developing memory, ability to observe accurately, ability to calculate, to think, to comprehend and to follow directions.

These suggestions may also be used with slight variations with the oblong blocks.

### CUBES COMBINED WITH BOARDS

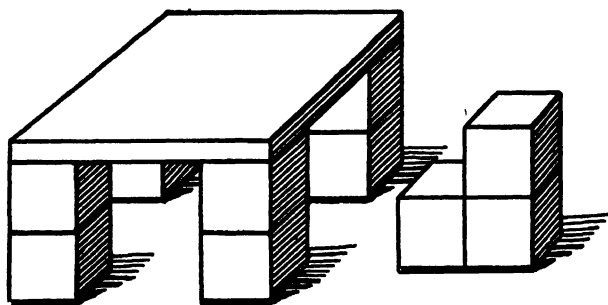
Because each type of block is here being treated separately it does not follow that the children are to exhaust the possibilities of any one type before using another. At the risk of boring the reader may it again be repeated that this order is intended for the mother and teacher. They are to select from each group of suggestions those which will best meet the needs of the particular situation.

Children are not expected to use the cubes alone in all possible ways before combining them with the boards. There will be some, of course, who will be perfectly content to play with these simple forms for days and will find great satisfaction in the mere manipulation and piling. The more immature and less creative a child is the longer will this be true. There will be others, how-



ever, to whom the very first building with cubes will suggest an idea which can be more satisfactorily expressed by the addition of a few boards. Note, for example, how quickly the bridge or shed will develop if the boards are within sight and reach and the children feel free to help themselves. Note, also, how quickly the boards are utilized in the making of furniture forms—such as the table, bed, chair or cupboard.

The following illustrations will show some of the added possibilities when the boards are combined with the cubes.



1. Table and Four Chairs

*Materials:*

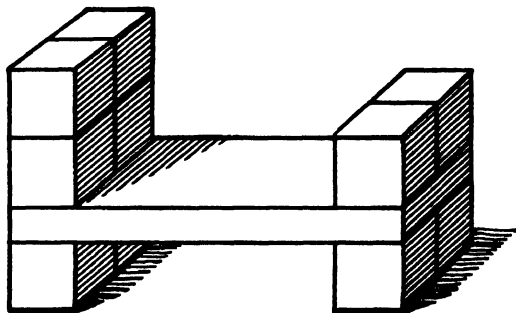
20 Cubes—2".

1 Board—8" x 8" x 1/2".

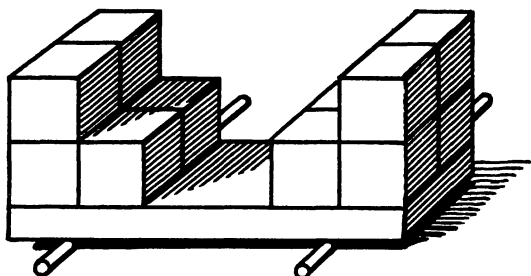
*Materials:*

20 Cubes—2".

2 Boards—12" x 4" x 1".



2. Twin Beds.



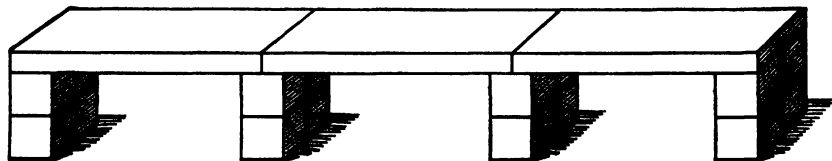
3. Roller Swing

*Materials:*

12 Cubes—2".

1 Board—12" x 4" x 1".

2 Dowel Rods.



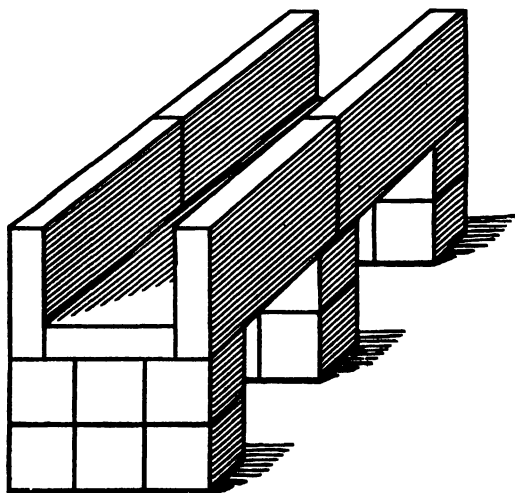
4. Bridge.

*Materials:*

16 Cubes—2".

3 Boards—12" x 4" x 1".

(Vary the height, width and length).



5. Bridge

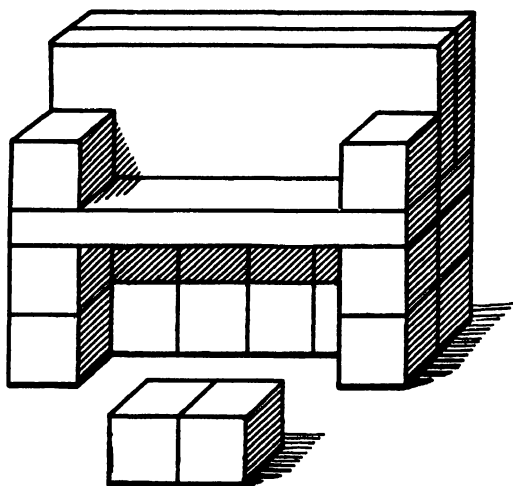
*Materials:*

18 Cubes—2".

6 Boards—12" x 4" x 1" or

3 Boards—24" x 4" x 1".

## BLOCK BUILDING



6. Piano.

*Materials:*

18 Cubes—2".

3 Boards—12" x 4" x 1".

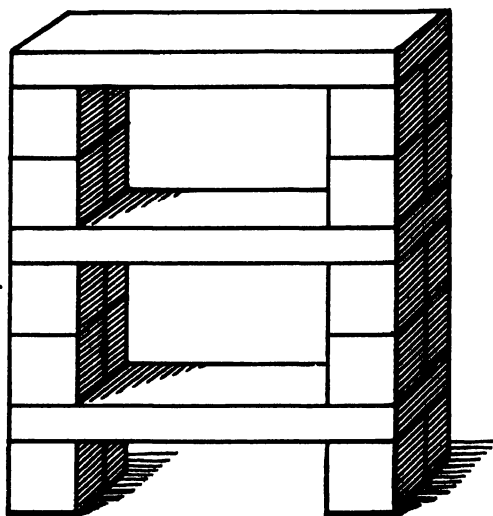
*Materials:*

20 Cubes—2".

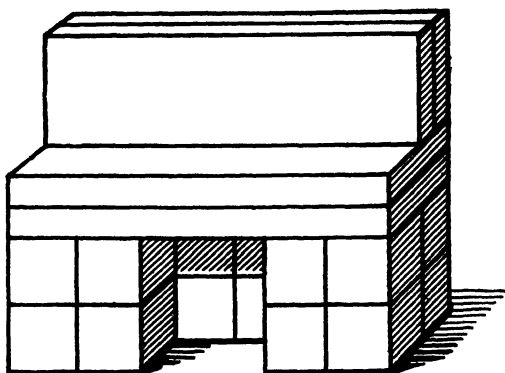
3 Boards—12" x 4" x 1".

Counter—1 Board—12" x 4" x 1".

4 Cubes—2".



7. Shelves



8. Fire-place.

*Materials:*

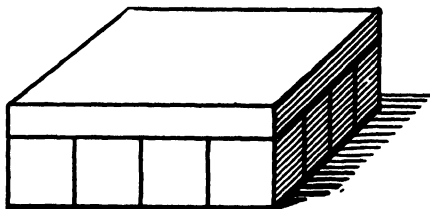
20 Cubes—2".

1 Boards—12" x 4" x 1".

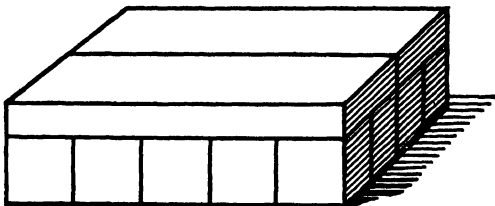
*Materials:*

12 Cubes—2".

1 Board—8" x 8" x 1/2".



9. Platform



10. Platform.

*Materials:*

14 Cubes—2".

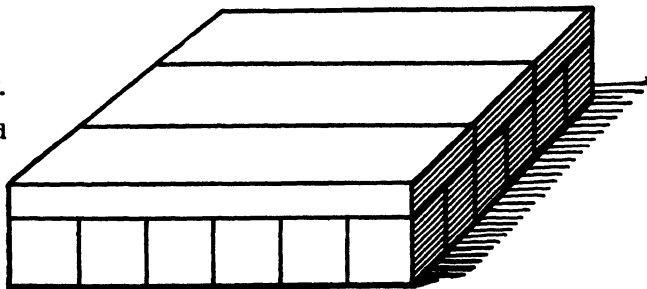
2 Boards—10" x 4" x 1".

*Materials:*

20 Cubes—2".

3 Boards—12 x 4" x 1".

Note: Add railing and steps for bandstand.  
Add walls for house.  
Substitute double oblong blocks for cubes.



11. Platform

## CHAPTER VII

### DIRECTED USE OF OBLONG BLOCKS

In his play with the cubes we saw the child gradually gaining in muscular control, in the ability to arrange his materials to better express his ideas and in an appreciation of the details of objects in his environment.

The clumsy cube with its uniform dimensions, has served its purpose for manipulating, for piling and for stimulating ideas, and must give way to a block that has greater variety of dimensions and hence greater possibilities when combined with others of the same shape.

The crude enclosures of space, the towers, walls and furniture forms made with the cubes no longer satisfy and we note the added joy when, in his *experimental* play with the oblong blocks, the child finds that he can make a greater variety of enclosures; longer and higher fences and walls, and fences and walls that more nearly approach in their construction those with which he is familiar; higher and more interesting towers, and furniture that is more varied and pleasing.

If one notes carefully the variety of forms appearing in the first free use of this material, she will observe that each embodies one or more of the following added possibilities of oblong blocks, (a) Length of line (b) Extent of surface (c) Enclosure of space (d) Greater balance.

If by any chance any one of these uses of the oblong block does not appear and the teacher anticipates that it may be needed

in some later work she will, through some form of directed activity, see that it comes within the child's experience. She will also see to it that forms made by individual children, particularly those having possibilities for future development or embodying principles which may be utilized later, are brought to the attention of the entire group.

This may be done through a discussion of the form a certain child has built, calling attention to the important features, suggesting improvement, or as is sometimes done, by asking all the children to build the same thing. Care must be exercised lest the latter sink to the level of blind imitation.

There are some children who will need *very definite help*. Their ideas may be far in advance of their technique or they may excel in hand skill while lacking in ideas. For others it may be necessary to stress the simplest and most elementary use of the blocks.

A detailed discussion of the principles underlying the use of oblong blocks will not be entered into here, since Miss Fulmer has treated the matter so fully in "The Use of the Kindergarten Gifts" pages 69-83.

The following practical suggestions may help in the intelligent guidance of the child's play with these blocks.

### PLAY WITH DIFFERENT DIMENSIONS

It is recommended that only one size of oblong block, preferably the enlarged or medium size, be used in the first directed or controlled play. This is important in order that difference in *position* may not be confused with difference in *size*. Lead the children by means of some playful activity to a recognition of the *three* different dimensions of the oblong block since it is

*length, breadth* and *thickness* which give to this block its varied possibilities of position.

These important features will be emphasized if the blocks are placed *singly* first on the broad faces, then on the long narrow faces and finally on the end faces. Eight or ten or even twelve blocks may be used for this play. The exact number will be determined by the degree of hand skill, by the amount of material available for the group and by the amount of floor space. There must be ample room for the spreading out of the blocks and for the building of high forms.

This type of work cannot be carried on at tables where children are seated close together since it demands too much control on their part to avoid striking their neighbor's work. It will be a great spur to creativity if, after spreading the blocks out on the different faces, it is suggested that they build a form or forms in which all the blocks used are placed on their broad faces, then forms in which all the blocks are placed on their long narrow faces and finally on their end faces.

Try it, reader, and prove to yourself that this limitation of position presents problems which encourage thinking as greater freedom in the placing would not.

The forms resulting from the above positions will also emphasize the four essential characteristics previously referred to, namely, Length of line, Extent of surface, Enclosure of space and Balance.

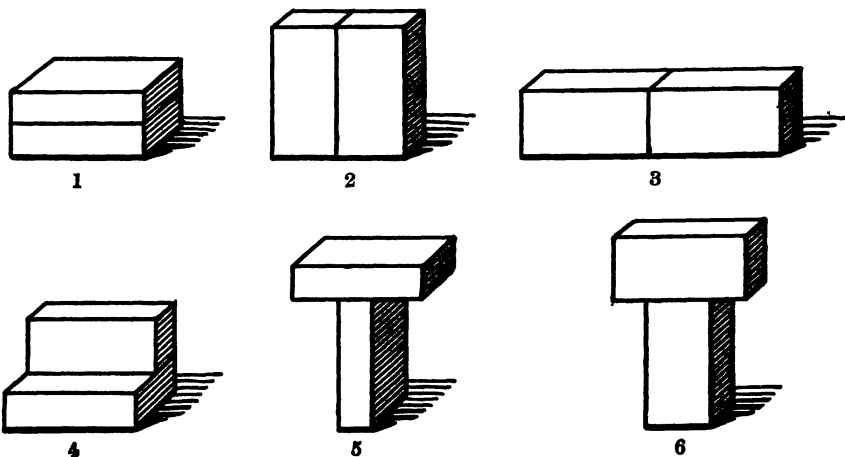
### SIMPLE CONSTRUCTIVE UNITS

With ten or twelve blocks, or more if it seems wise, in an orderly pile before each child, suggest that they see in how many different ways they can place *two* blocks together. This is not unlike a game in which adults are interested, namely, making as many words as possible from the letters in one long word.

Some are of the opinion that this play of combining only two blocks is altogether too limiting for young children but it is to be remembered that they have *already had free use of many blocks in their experimental play* and some children were found to be lacking either in hand skill or in ideas. This is one of the simplest means of helping those who need it to discover possibilities of position which were not revealed to them in their free play and also to gain skill in the handling of a few blocks before being expected to place a larger number. Many combinations with only *two* blocks are possible and children will compete with each other in an effort to see who can think of the greatest number.

Some of these two-block arrangements are more valuable than others for purposes of construction and have therefore been called constructive "units" or "elements".\*

The six typical units, or those most commonly used and of which the other combinations are merely variations, are as follows:



Typical Constructive Units.

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\* Fulmer, Grace. "The Use of the Kindergarten Gifts," Appendix—page 215.



1. Broad faces touching.
2. Long narrow faces touching
3. End faces touching
4. Broad face touching long narrow face
5. Broad face touching end face
6. Long narrow face touching end face.

Let us now take each of the constructive units in turn and repeat it as many times as we can with our twelve blocks. When you have repeated one unit six times decide for yourself whether or not you are able to make the last one any more easily or quickly than you made the first one. You will thereby prove one of the important laws of learning, the "law of exercise."

When the six of any one unit are before you will you not, like the children, wish to push them together or to do something with them? This combining of units, first units of the same kind and then units of different kinds, will give rise to many interesting forms.

Again let me repeat that the steps here outlined are for the *student in training and for the teacher*, in order that they may first of all become skilled in the handling of the blocks and alert to the variety of objects that may be made with them. They will then be able to help Johnny or Mary to achieve a little more satisfactorily the idea each is struggling to realize.

If the reader will now make these units by placing her blocks in the various positions and build according to the following directions, she will begin to appreciate their possibilities. She, too, will soon find herself trying first one arrangement and then another just to see what will happen next. Without this handling of the material herself, the teacher can no more learn to create with it than can she learn to play the piano without mastering the first simple exercises in music.

## SUGGESTIONS FOR COMBINING THE CONSTRUCTIVE UNITS

*Unit Number 1—Broad faces touching:*

The enlarged oblong block is recommended for the type of work which follows, since the units are more easily handled and may be kept intact while being moved.

Let us repeat this unit four times by using eight of our twelve blocks, adding more as they are needed.

1. Place the four units together end to end. (Fig. 1)

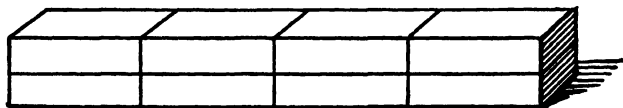


Fig. 1.

2. Separate them; place them together so their long narrow faces touch and we have a form suggestive of a box, a porch, a platform.

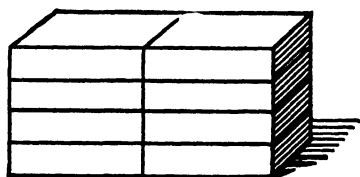


Fig. 3.

3. Place the four blocks now in front, on top of the remaining four and we have a crude wall. (Fig. 3)

4. Immediately will come the desire to place one half on top of the other half and we have a higher wall (Fig. 4) or a chest of drawers or, to the prosaic mind, it may be just a higher pile of blocks.

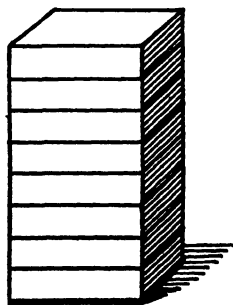


Fig. 4.

Children take keen pleasure in piling the blocks in this manner and may wish to add more at this point in order to make their walls higher and longer.

Or they may wish to combine their walls with the walls other children have made and we have the beginning of cooperative play.

Larger or smaller oblong blocks may be used in the same way.

When the walls are combined, enclosures of various dimensions appear. Then arises the need for a roof and we find the boards being selected to span the open space. A door must be made in the wall and so the idea grows and develops until, before we know it, a house appears.

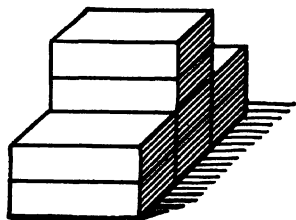


Fig. 5

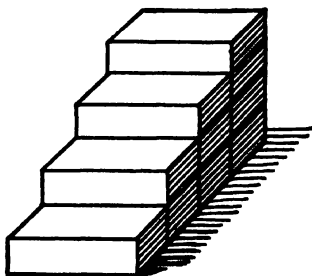


Fig. 6.

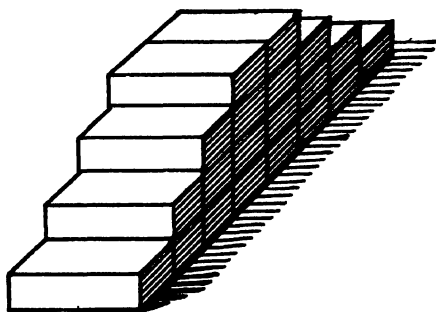


Fig. 7.

5. It may be that the *wall* doesn't make the appeal we thought it would so we suggest that two blocks be placed in front and two be placed back of the remaining center blocks and we have a crude stile or steps. (Fig. 5)

6. With the idea of steps, more blocks may be added and we have a flight of four steps (Fig. 6). These will now make a good approach to the bridge previously made with cubes and boards.

(See Cubes Combined with Boards  
—Chap. VI.)

Add more blocks and we have a better stile (Fig. 7) or a longer flight of steps with perhaps a door at the top. (Fig. 8)

Only a few children may make this particular form or one similar to it but because it has features that will be utilized again and again, it is one

that should be brought to the attention of the entire group. It

might be suggested that all the children make (a) steps or (b) steps and door or (c) doors. While a limitation has here been imposed by the teacher, in that all are to make the same thing or any one of three things, there will be marked individuality shown in the variety of steps or doors made. If the large floor blocks (double enlarged oblong blocks) are now used, variety in size will also appear. The children, too, may wish to work together and larger coöperative schemes will develop. Play with these forms may continue for days and so long as there is evidence of growth, the teacher need not interfere other than to approve and encourage.

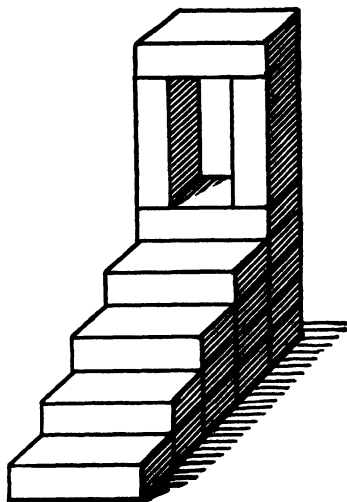


Fig. 8.—Steps and Door.

Perhaps more emphasis needs to be placed upon the arrangement of blocks such as that shown in the *door* or *window*. The attention of those who need this particular type of exercise may for a period be concentrated upon the making of windows. (Fig. 9). Some persons have thought this

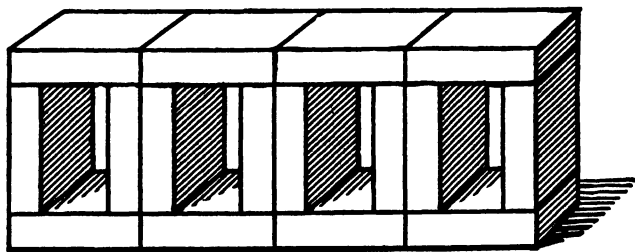


Fig. 9. Windows

savored too much of drill, others have criticized it on the grounds that it was directing too much attention to one feature of a house

rather than to the larger unit—the house itself. *To a little child a door or a window represents the whole house.* Either one is a complete unit to him and not a part of a larger unit. It functions in his play long before the larger house with its four walls, roof, windows and doors. If, however, children of more mature ideas can and do make the house with these details, then it would be poor pedagogy, indeed, to expect them to concentrate on these earlier and simpler forms. On the contrary, let us not, in our haste to reproduce details, hurry the immature child through this “symbolic” play stage when one interesting feature represents to him the entire form.

Much interesting play centers about this little window and children take great pleasure in making many of them and combining them in a variety of ways.

(A) Place them side by side and we have a grouping (Fig. 9) such as will appear in later house forms.

If one question, more than another, has been asked in connection with the work of the children, it has been the one regarding the placing and arranging of the windows in the house. “How did they know where to place them?” “How large to make them?” etc. The answer is simple. The first houses were crude. Many of them had doors but no windows. The wise teacher realized that the important feature for emphasis in this stage of house making was not the details of window construction but rather the need for plenty of light and air. She was happy when openings began to appear in the walls and for a time children were satisfied with mere holes for windows.

Later, however, their attention was called to the windows about them and they discovered many interesting things with reference to their size, number, arrangement, location and construction.

Out of this experience developed a more conscious use of the window in relation to other features of the house.

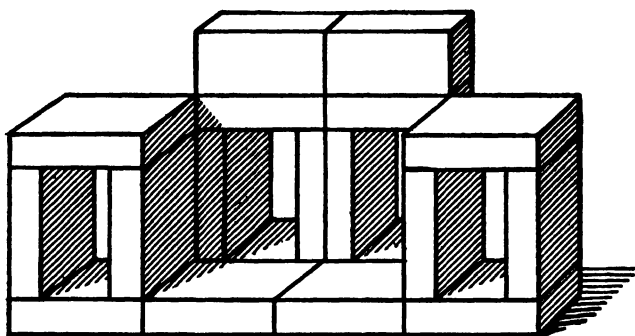


Fig. 10.

step or terrace and two more for "the name of the store" as was suggested by the children. (Fig. 10)

(B) Returning now to Figure 9, draw the window at the right and the one at the left forward and you have a suggestion of a receding doorway. Add two blocks for the

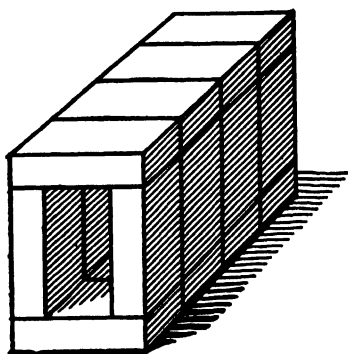


Fig. 11.

(C) Place one unit back of the other and we have a covered bridge, a colonnade, a long passageway. (Fig. 11)

(D) Place one unit on top of the other and we have a sky-scraper. Place as in Fig. 12 and we have less height and more width.

Combine this with three other large units like it. Place two boards 12" x 4" x 1" across the top and note the result, a building with windows on all sides. It is somewhat suggestive of an office building.

The mature child will construct such a building after a visit to his father's office, without having to pass through the simple steps just outlined but there are others for whom a certain amount of directed work is necessary before it is possible to achieve any creative results. When the units are piled as in Fig. 12, the attention of the children should be called to the unnecessary

thickness of the floor between the first and second story. The simple question, "Are all of these blocks needed for the floor?"

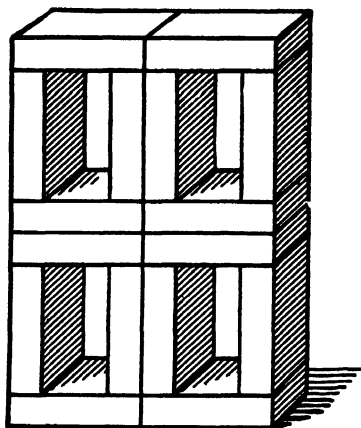


Fig. 12.

which they are already familiar. The play of merely fitting windows into walls, first singly, then in twos and threes, is in itself interesting. It has an added interest, however, when employed later in the construction of houses, boats, street-cars or any form in which windows are found.

Variations will naturally arise in this later construction of walls and windows, depending upon the combination of blocks used as well as the position in which they are placed. (See photographs 1, p. 192; 8, p. 197; 10, p. 198).

will lead them to remove the surplus material and use it for some other purpose. (Fig. 13)

(E) If you will now repeat the first crude wall (Fig. 3) and fit into it a single window, you will have a form that will suggest many other possibilities. (Fig. 14)

This simple form has a peculiar fascination for children since it utilizes in combination two ideas with

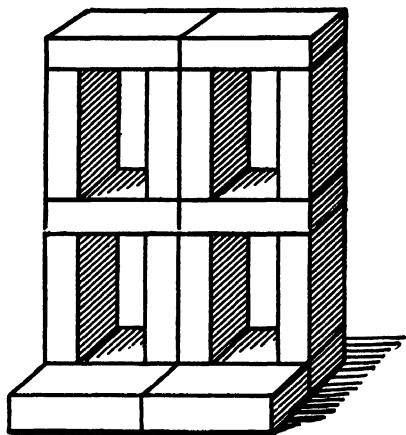


Fig. 13.

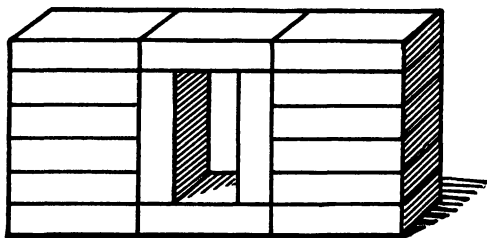


Fig. 14. Wall and Window

(F) This window element may also be turned so that all the blocks rest on their long, narrow faces. (Fig. 15). An entirely new series of forms will develop.

Place them side by side; end to end; one on top of the other. By removing a

block here and adding another there, you will discover for yourself forms suggesting a watering trough, a manger, a feed box, a window box and these, in turn, become the basic forms for wagons, street-cars and boats.

All of these objects will have an added interest when repeated with the double enlarged blocks. The combination of two, or even three sizes, in one form suggests even further possibilities. Later chapters will show ways and means of making these simple forms more realistic.

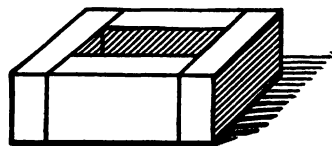
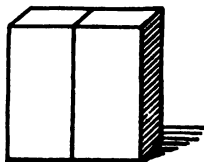


Fig. 15.



### *Unit Number II—*

Let us turn to the second of the original units. The long narrow faces of the oblong blocks are now touching.

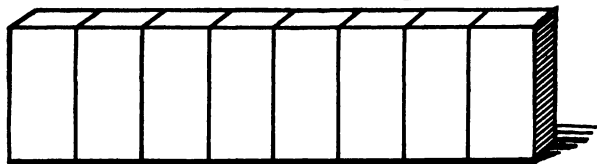


Fig. 1.

(A) Repeat this unit four times. Place them side by side and note the long wall. (Fig. 1)

(B) Combine the walls and make enclosures. (Fig. 2)



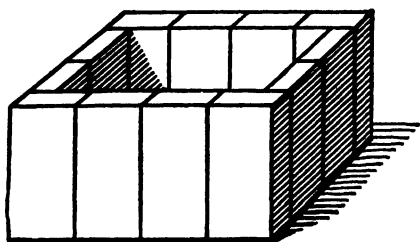


Fig. 2.

we find a new use for the blocks.

(C) Pile the units or place two on top of the other two and we have a higher wall. (Fig. 3). This probably developed when

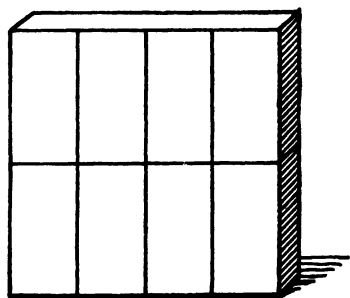


Fig. 3.

children were making enclosures. If not, it is a position to which their attention should be called.

Remove two oblong blocks from the center of the top row and place across the top on their long narrow faces. (Fig. 4).

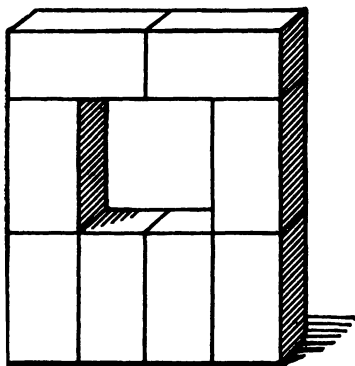


Fig. 4.

This will be used for some time before it will occur to a child that he may make *two window frames* with oblong blocks of the next smaller size and place them in this opening. When this is done he has one wall of a house and a mere suggestion that he make three more and combine them is all that will be necessary to stimulate renewed effort. (Fig. 5)

Place this on a foundation made of two boards 10" x 4" x 1". Add roof,

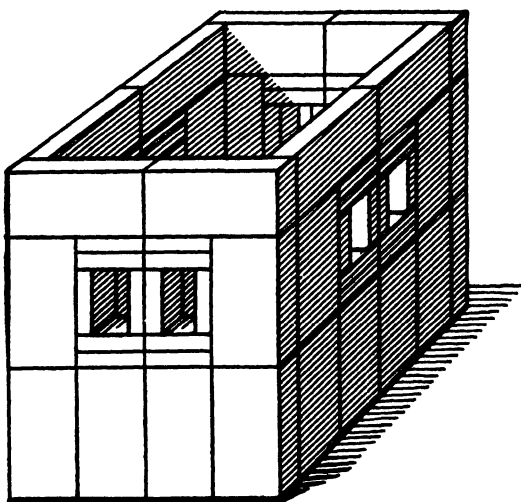


Fig. 5

The order just outlined is a logical rather than a psychological order.

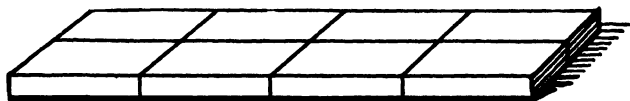


Fig. 6.

*Unit No. III—End faces touching:*

(A) Proceed as before by repeating this unit four times.

(B) Place end to end for long, low fence and enclosures (Fig. 1)

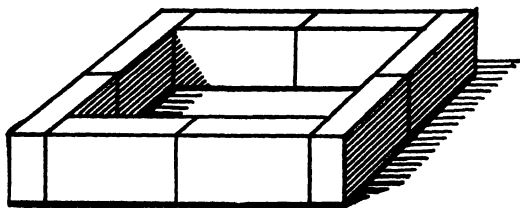


Fig. 1.

door, steps or incline and we have a house, a store, a garage or any one of many other buildings.

(D) Place the units flat on the table, resting on their broad faces, and surface forms such as walks and floors appear. (Fig. 6)

These may be the first forms to develop and if so, the idea of wall will follow very naturally.

(C) Place one in front of the other. (Fig. 2). Remove the four oblong blocks in the center and place across the top for a tunnel. (Fig. 3)

Remove the four blocks

now on top. Place one at the right and one at the left closing the open ends. Place the other two inside for a bottom and we

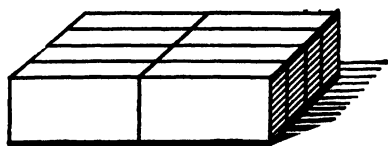


Fig. 2.

have a flower box or watering trough (Fig. 4). *This form will appear again and again, with variations, in the street-cars, trains, autos and boats.*

(D) Place these elements with the broad faces of the oblong blocks resting on the table and we again have surface forms.

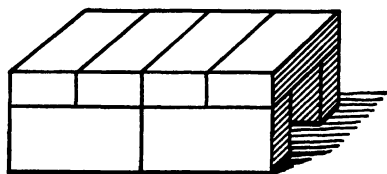


Fig. 3.

already been described. Many of the forms obtained by combining the preceding units, such as the enclosures and windows, will

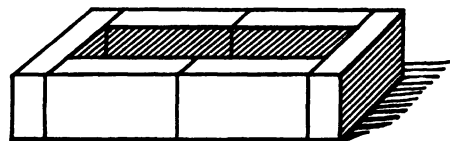
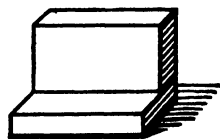


Fig. 4.

It will not be necessary to deal so thoroughly with the three remaining units since the manner of combining them side to side, end to end, one on top of the other, and one in front of the other, has already been described. Many of the forms obtained by combining the preceding units, such as the enclosures and windows, will appear again when the remaining elements are combined, particularly if the latter are inverted.

#### *Unit Number IV.—Broad face touching long narrow face:*

This element makes a very great appeal to children, possibly because the various combinations result in forms that are so familiar—benches, chairs, beds, tables, counters and shelves.

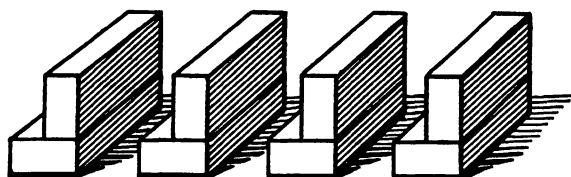


The element itself resembles a little bench and, when inverted, a table. For this reason it is often called the Bench or Table element. We shall see this Bench element re-appearing—in

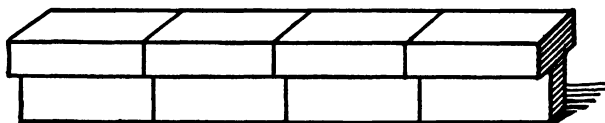
trains, street-cars, automobiles and boats and from it will also develop the more elaborate furniture forms for the house. When several of the Table elements are related to each other in a variety of ways we have a new series of forms.

With the addition of more and larger blocks these forms will naturally be more interesting.

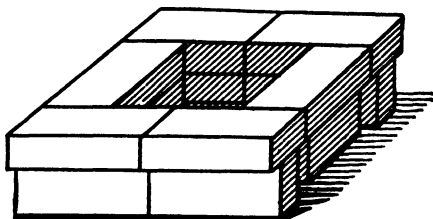
#### SUGGESTIVE ARRANGEMENTS OF THE BENCH OR TABLE ELEMENT



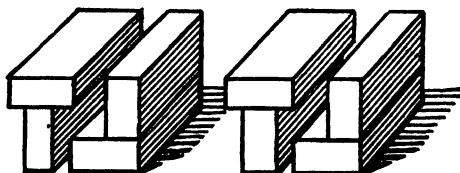
1. Seats—Vary the arrangement.



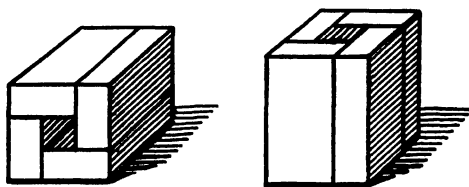
2.—Long Counter.



3. Booth or Market Stall.



4. School Seats and Desks.



5. Chimney.

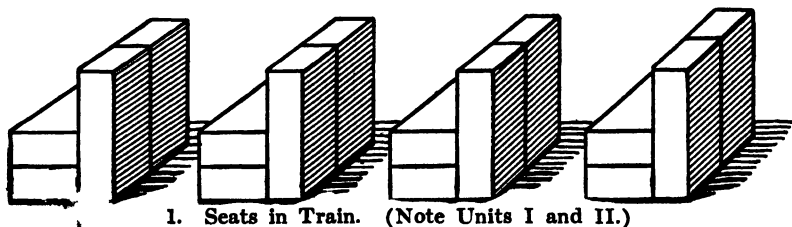
*Units Number V and VI:*

If the reader will follow the same procedure with Units V and VI as has been described for Units I, II, III and IV, she will discover for herself many interesting combinations. Some of the results will be very much like those obtained with the other elements, but this only lends interest since even in block building one is glad to meet old friends.

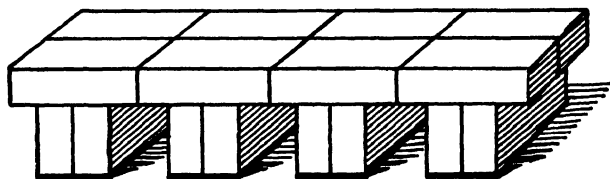
## TYPICAL FORMS SHOWING SEVERAL UNITS IN COMBINATION

If one will take the time to analyze each of the following simple forms into its component parts she will find herself becoming more skilful in the recognition of the *constructive units* which have previously been described and more alert to the various ways of combining them. A teacher cannot offer suggestions for the improvement of a child's building unless she is able to diagnose that building in terms of good or poor construction. This ability to recognize a good or poor use of blocks is as essential for satisfactory block work as is the ability to recognize correct or incorrect grammar in the use of language.

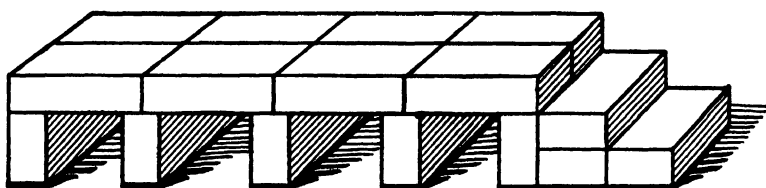
These forms are merely examples in miniature of what may be done on a large scale with a greater number of blocks.



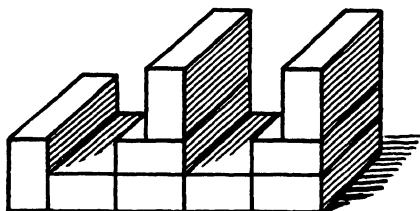
1. Seats in Train. (Note Units I and II.)



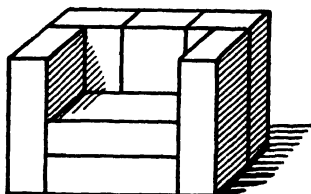
2. Bridge. (Units I, II.)



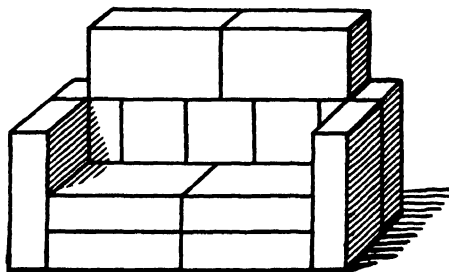
3. Bridge. (Units I, II.)



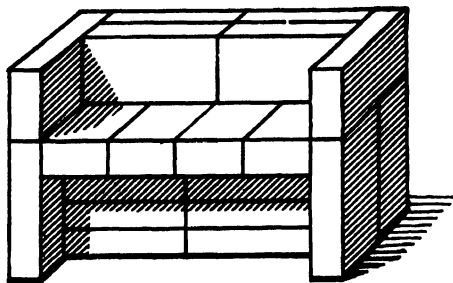
4. Wagon (Units II, IV.)



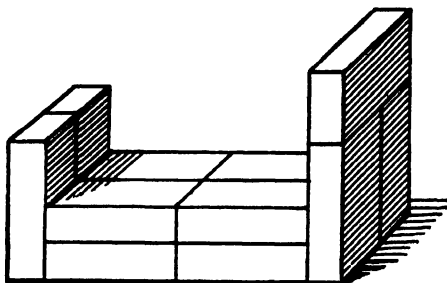
5. Arm Chair (Units I, II, IV.)



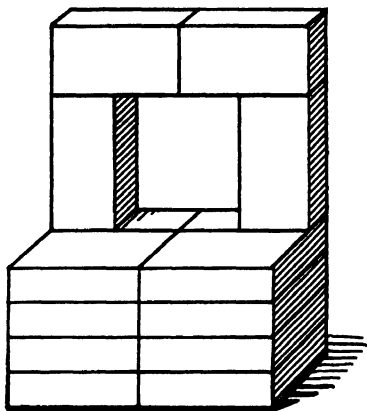
6. Bench. (Units I, III, IV.)



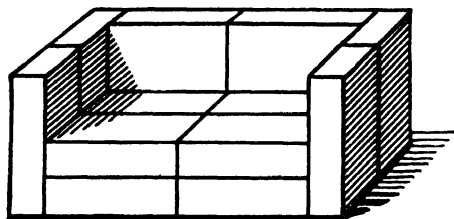
7. Piano. (Units I, II.)



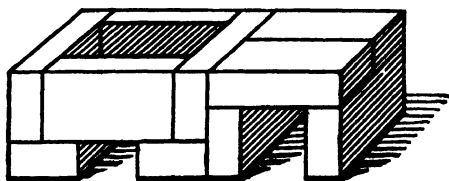
8. Bed. (Units I, II.)



9. Dresser. (Units I, VI.)

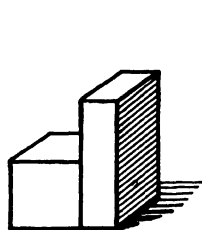


10. Davenport. (Units I, II, III.)

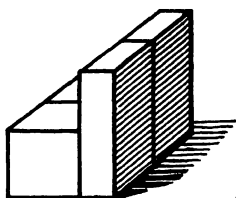


11. Sink and Drain. (Units II, IV, V.)

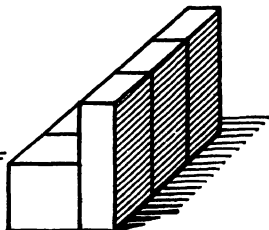
## OBLONG BLOCKS COMBINED WITH CUBES



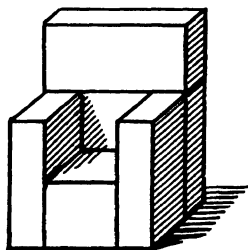
1. Chair.



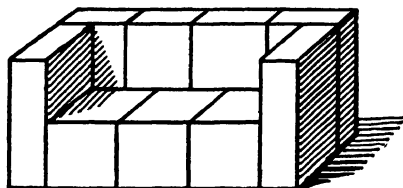
2. Bench.



3. Longer Bench.

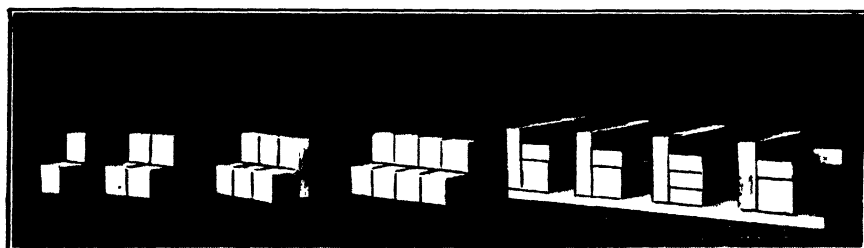


4. Arm-Chair.

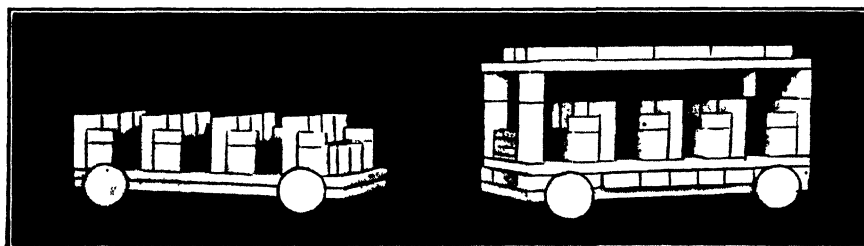


5. Pew

## DEVELOPMENT OF A STREET CAR



Note the use of Cubes and Oblong Blocks for Seats.



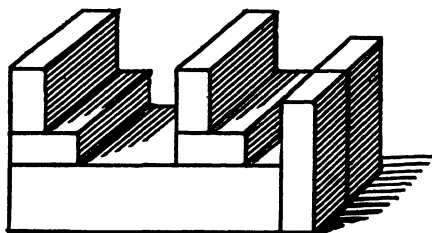
Seats Placed on Boards with Wheels Attached; Roof Added.



## OBLONG BLOCKS OF DIFFERENT SIZES IN COMBINATION

Forms become more suggestive and therefore more interesting as we increase the variety of dimensions. For the child who lacks hand skill or who fears to attempt a large project, the simple forms will be found helpful.

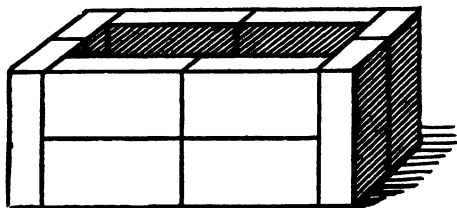
Results are easily and quickly obtained. Successful achievement brings with it a feeling of satisfaction and confidence and with a little encouragement the child will attempt to repeat the form. He will make two, three, and perhaps more exactly alike and gradually he will begin to change them in some way. At first he may only push them together but even this simple activity suggests size to him and he begins to add more material. A disapproval from the teacher, a suggestion now and then as to this or that possibility of improvement plus ample opportunity for experimentation will usually result in more creative work.



1. Basic Form for Roller Coaster

*Materials:*

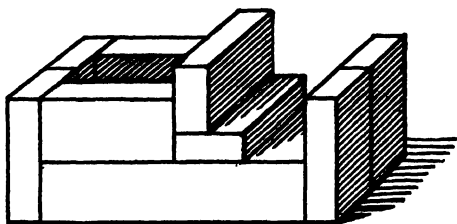
- 1 double enlarged oblong block
- 6 enlarged oblong blocks.



*Materials:*

- 1 double enlarged oblong block
- 8 enlarged oblong blocks.

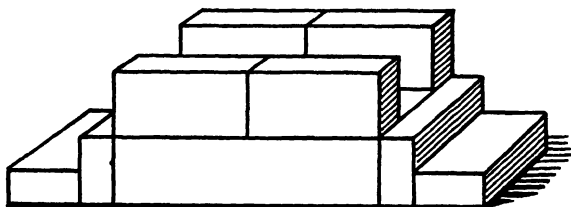
2. Bin—(Remove 2 ob. in front and make davenport).



3. Basic Form for Trucks

*Materials:*

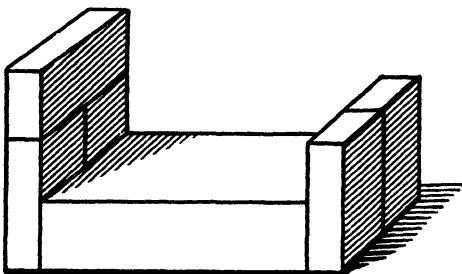
1 double enlarged oblong block  
8 enlarged oblong blocks



4. Bridge with Railing

*Materials:*

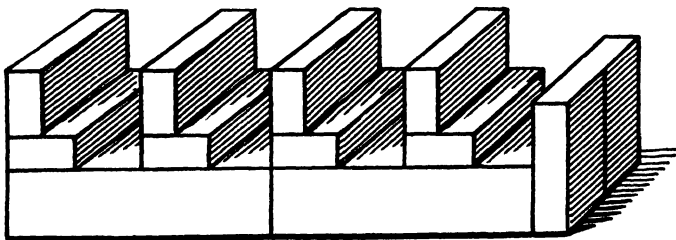
1 double enlarged oblong block.  
8 enlarged oblong blocks.  
(Increase the length and width).



5. Twin Beds.

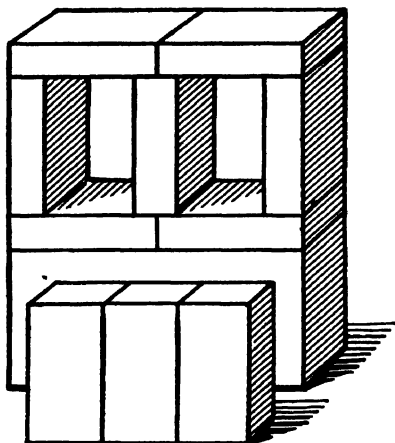
*Materials:*

2 double enlarged oblong blocks.  
10 enlarged oblong blocks.



6. Roller Coaster Car.

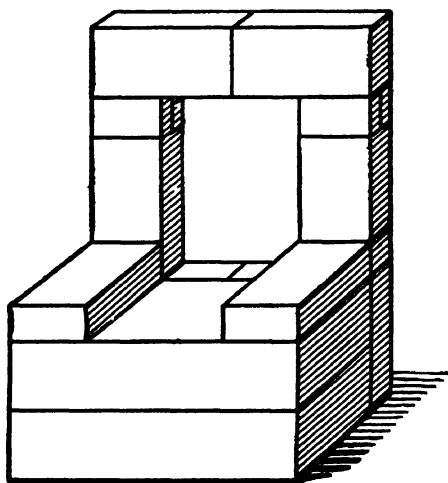
*Materials:* 2 double enlarged oblong blocks. 10 enlarged oblong blocks. (8 small oblong blocks placed between the seats as protection to passengers.)



7. Ticket Window.

*Materials:*

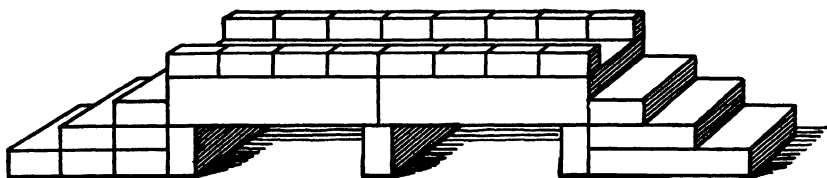
- 1 double enlarged oblong block.
- 10 enlarged oblong blocks.



8. Dresser.

*Materials:*

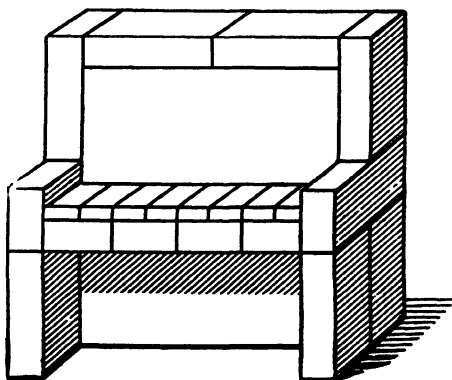
- 2 double enlarged oblong blocks.
- 10 enlarged oblong blocks.
- 4 small oblong blocks.



9. Bridge—Note the Repetition of Positions of Blocks Previously Used.

*Materials:*

- 2 double enlarged oblong blocks.
- 15 enlarged oblong blocks.
- 16 small oblong blocks.

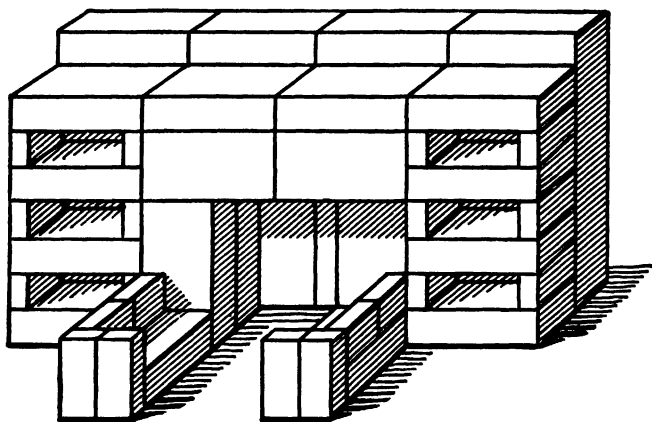


10. Piano. (Units II, III, VI.)

*Materials:*

- 2 double enlarged oblong blocks.
  - 14 enlarged oblong blocks.
  - 8 small oblong blocks for keys.
- Note: 4 enlarged oblong blocks are placed from front to back on top of the double enlarged oblong block.

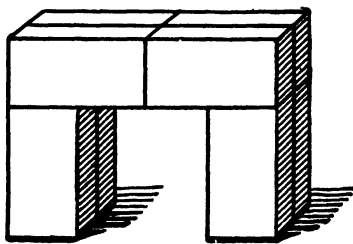
## BLOCK BUILDING



11. Fireplace—Shelves—Seats.

*Materials:*

- 4 double enlarged oblong blocks.
- 20 enlarged oblong blocks.
- 20 small oblong blocks.



Center of Fireplace.

### OBLONG BLOCKS OF DIFFERENT SIZES COMBINED WITH BOARDS OF VARIOUS DIMENSIONS

The use of boards with the blocks as a means of making objects more realistic has already been foreshadowed in the combination of boards with cubes and in the discussion of the forms developing from the various combinations of units. Like the child you have had the experience of manipulating certain blocks. Every

new arrangement suggested an idea and those ideas should now determine you in the selection of the materials necessary to perfect them.

You found that by combining two oblong blocks in a certain way a unit resulted. This unit, in turn, was combined with other units and gave rise to a form which suggested some familiar object because of some one or more features characteristic of that object. It ought not to be necessary now for one to have to take a board and combine it with the blocks in order to see what the result will be. On the contrary, the *idea* should be so well defined that the procedure will be reversed.

Instead of arranging the blocks in a certain way and saying to yourself that it looks like this or that, you should now be able to consciously define your problem and find a way to solve it.

Instead of placing several oblong blocks on end with their long narrow faces touching and calling the resulting form a wall, you will begin with the *idea* of wall and arrange the blocks accordingly. For example, let us suppose that an interest in a garden, a playground or a ball park becomes a motive for the making of an enclosure. What will be necessary to complete the idea? There must be an entrance, a place where one may buy his ticket and there should be seats. We, by chance, happened upon a form that suggested "ticket window." (See Fig. 7, p. 90). Can you not utilize that idea now, changing the form to make it more nearly resemble the ticket window you have seen?

Benches and steps have been made. Can you use either of those suggestions now for the grand stand? To make solid steps will perhaps require too much material. How can you hold to the idea of steps for your grand stand, since one seat is higher than the other, and yet economize on material? Let us see.

Place two enlarged oblong blocks on their broad faces eight

inches apart. Across them place a board 12" x 4" x 1". Back of each of these oblong blocks place *four* more, one on top of the other. Place another board across these. Place *six* oblong blocks back of each pile of four and across them a board. Does this not look like the seats in a playground or in a ball-field? Can you make them larger? This suggestion might lead to the use of the double enlarged blocks and the longer boards, 24" x 4" x 1". (See photograph 4, p. 101). Do we need some protection from rain or sun? With the question, "How can this be provided?" a new problem arises. Long boards may be used for the construction of a roof or an awning of some kind may be erected. This gives rise to another type of manual activity, since awnings can be better made with paper or cloth. *Blocks have their limitations and let us not try to have them express something which can be better expressed by means of some other material.*

At another time the problem may be the making of a house. What are the essential features to be kept in mind? Houses must have foundations, walls, roof, windows, doors, steps and chimney. In arranging the cubes you will recall that we made enclosures of different dimensions and found that boards 8"x4"x1" or 10"x4"x1" would fit across the top. (See Figs. 9, 10, 11, p. 67). Can you not make similar enclosures now as foundations and build the walls upon them? You will need a door and some windows. You have learned how to make both. Can you not place them in the wall? You will need a roof. What boards will span the space? How are you going to get into your house? Have you not learned how to make steps? (Fig. 6, p. 74). When they are added you will have a house complete with the exception of a chimney (and you know how to make that) and pointed roof. What blocks will you choose for a pointed (gable) roof?

This will lead to some experimentation with the *triangular* blocks and, if problems are encountered, a *directed lesson may be given as a means of leading to further discoveries of the uses and possibilities of this new block.*

Before leaving this discussion of oblong blocks and boards may it be suggested that the reader refer to the forms in preceding chapters and find out for herself how she can improve upon each one by the use of larger blocks and by the addition of certain boards.

Benches large enough for the child himself to sit on, furniture for the doll, counters, shelves and bridges may all be made more realistic and therefore will become more interesting.



## CHAPTER VIII

### CHILDREN'S CREATIVE BUILDING

Tommy has an auto with a driver on the seat;  
Jimmy has an engine with every thing complete;  
Patty has a play-house with tiny doors and locks;  
But I can *build* the things I wish, for I have  
Brand New Blocks!

—Dorothy M. Pierce



1. A Simple Enclosure.

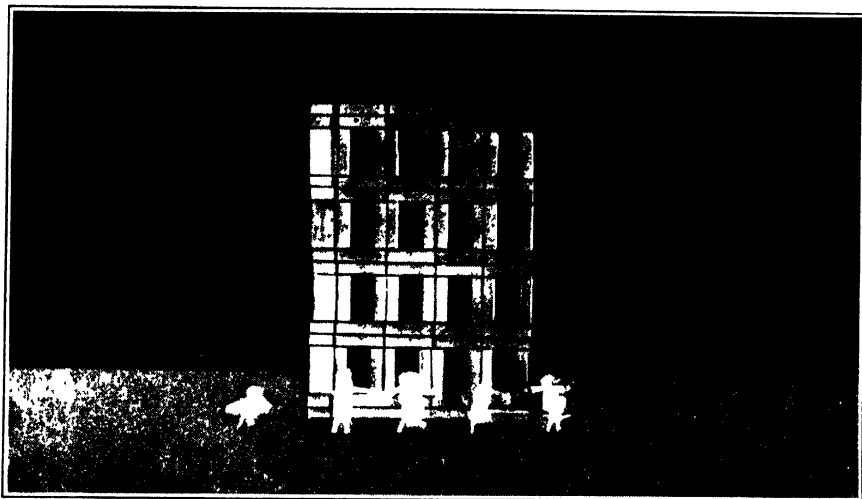


2. Toy animals suggested Fields, Stalls and Barns. (Note the number of "typical units" to be found in this simple farm play.)



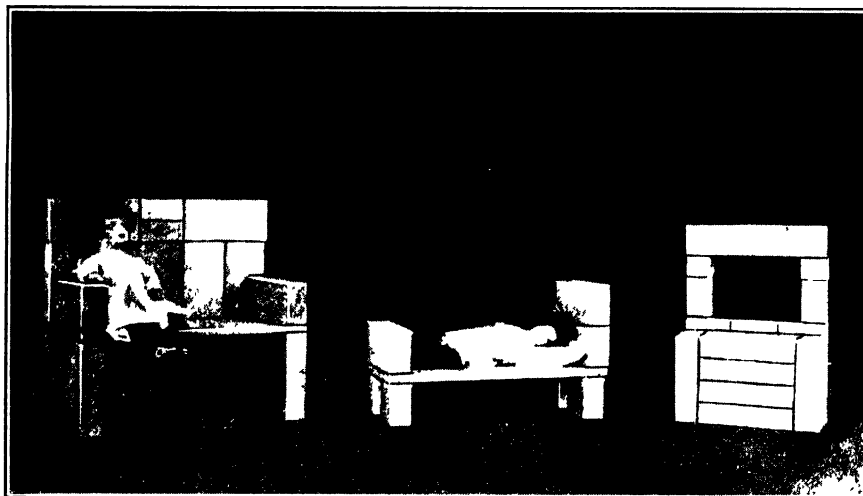
3. In these simple enclosures of space, showing stalls and sheds, lies the germ of later barn construction.

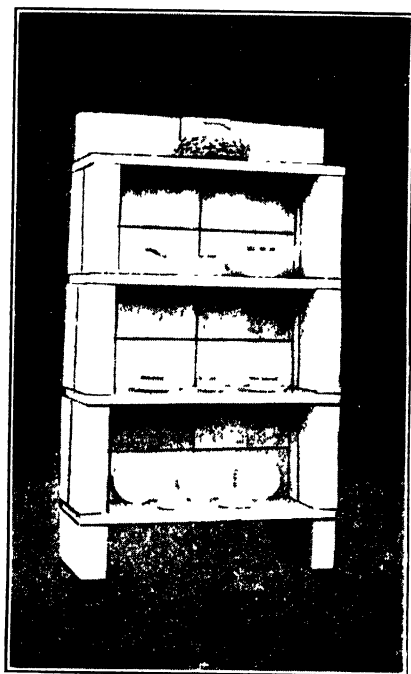
## BLOCK BUILDING



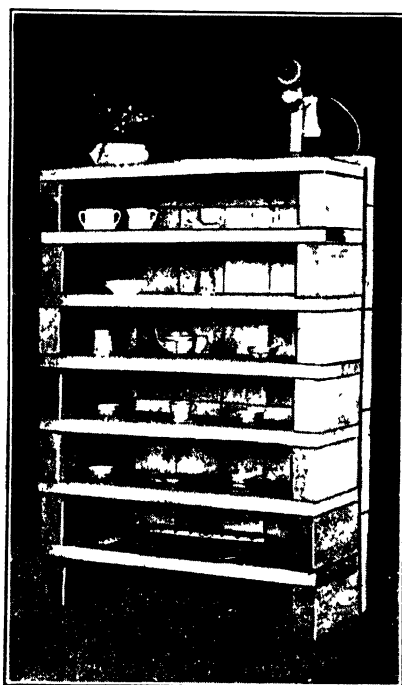
4. An Office Building Showing the Window Element

## FURNITURE FOR THE DOLL.





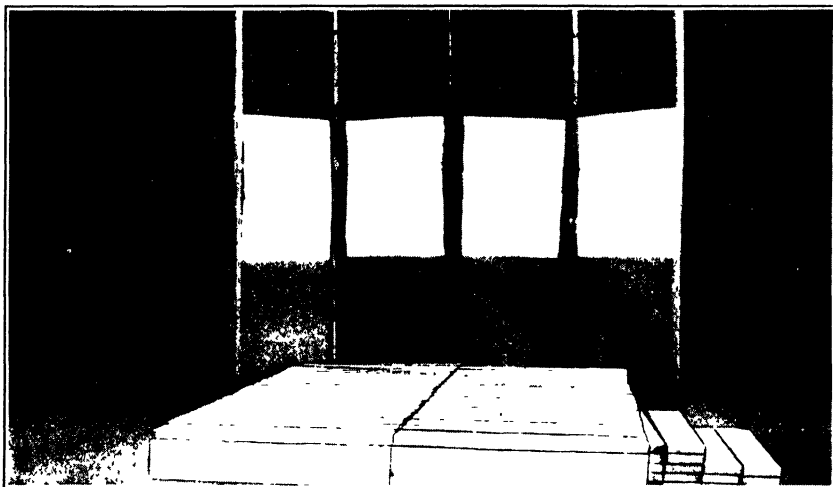
2.



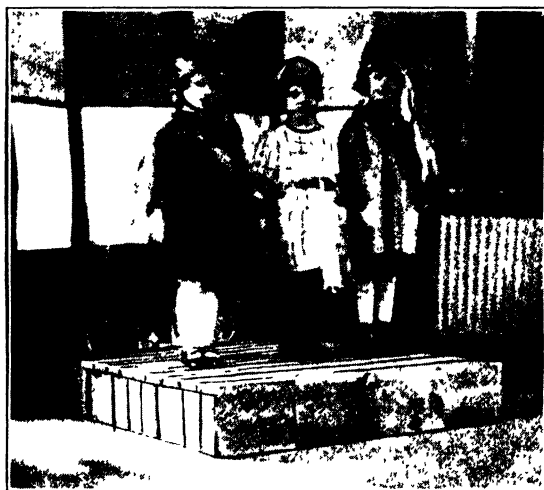
3.

## BLOCK BUILDING

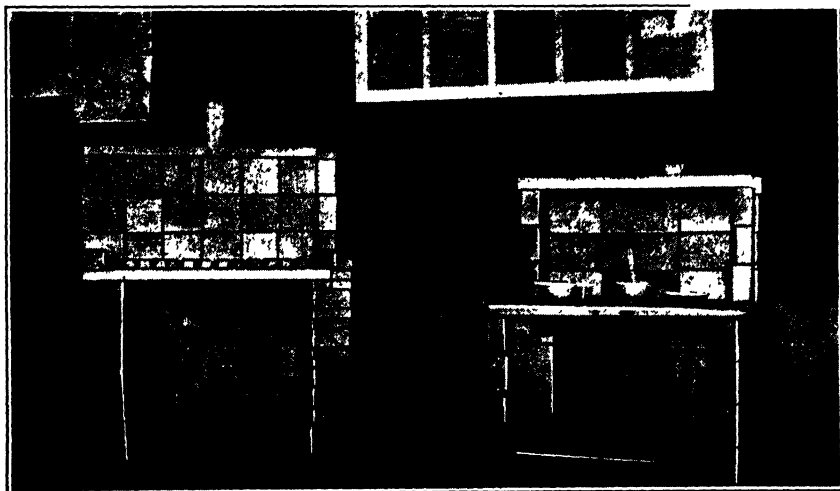
FURNITURE LARGE ENOUGH FOR A CHILD



1. We Make Our Own Stage and Scenery. This idea has been developed in a variety of ways. A stage of unusual proportions and of excellent construction had window boxes filled with flowers (also made by the children) across the front for decoration.



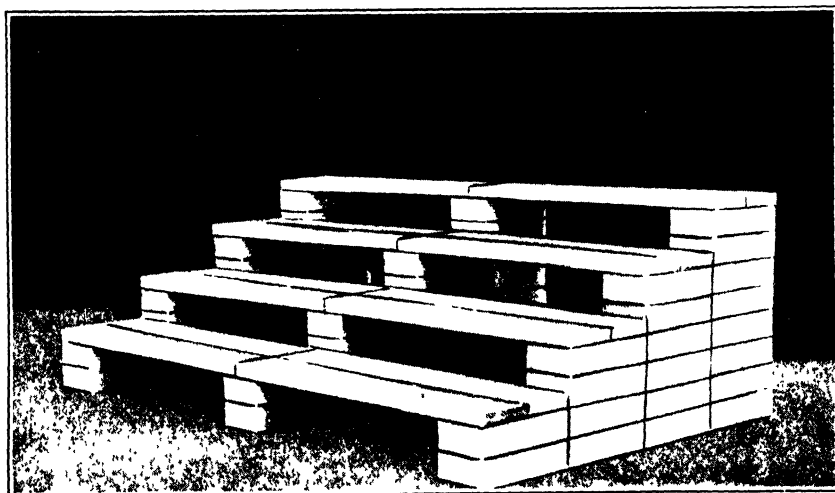
2 Ready for Our Play.



3. Piano

Stove

(Lack of sufficient material necessitated the use of square prisms. This is a good example of results when blocks are not accurately cut )



4. Bleachers.



5. He Prefers a Table and Chair of His Own Construction.



6. Room for Two

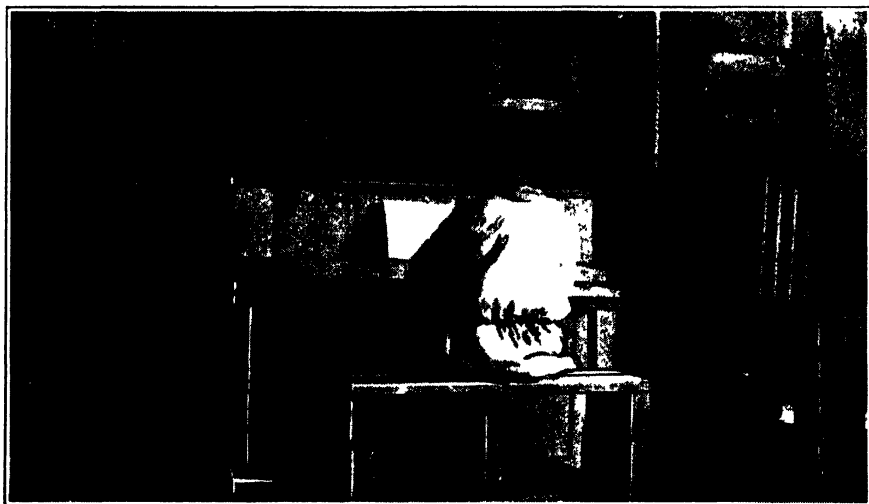


7. "The Sweetest Music Ever Heard."

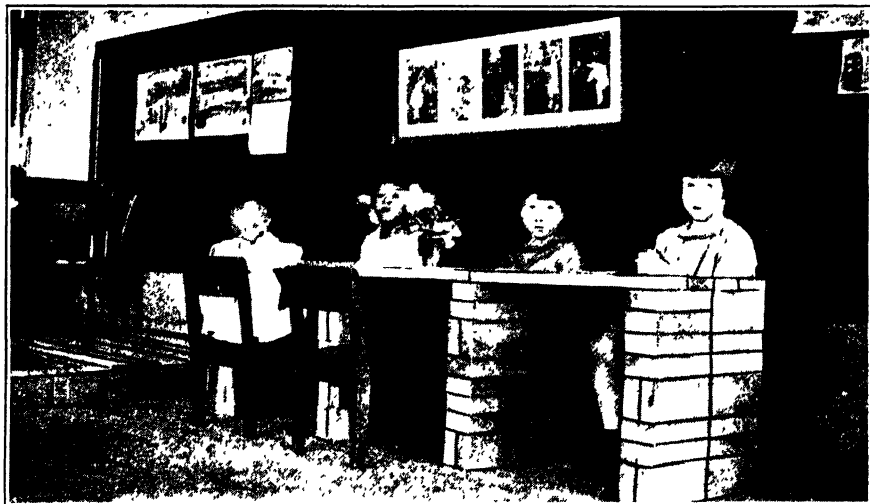


8. Using the Soft Pedal.

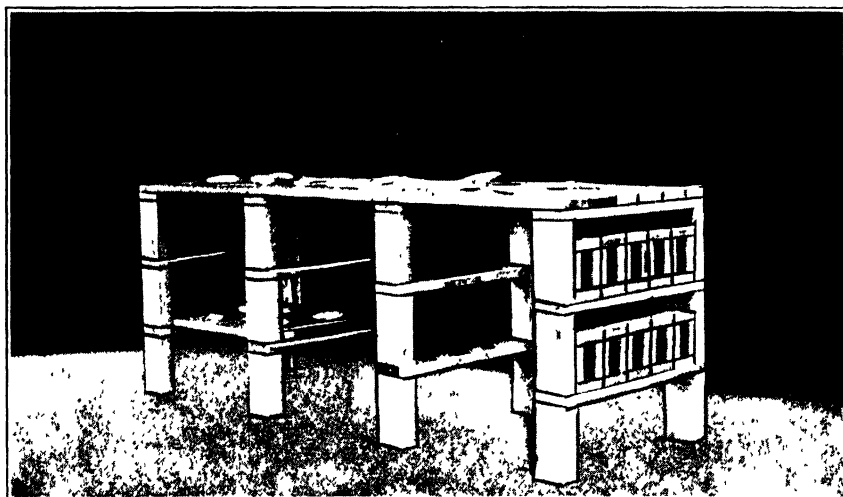




9. Playing Her Own Accompaniment.



10. It Is a Serious Moment When One's Picture Is About to be Taken



1. Note the improvement in the construction of the table and the use of the window element for decoration

Boards 24" x 4" x 1" are used with the double enlarged oblong blocks. Enlarged oblong blocks for decoration.



12. More Children Than Chairs

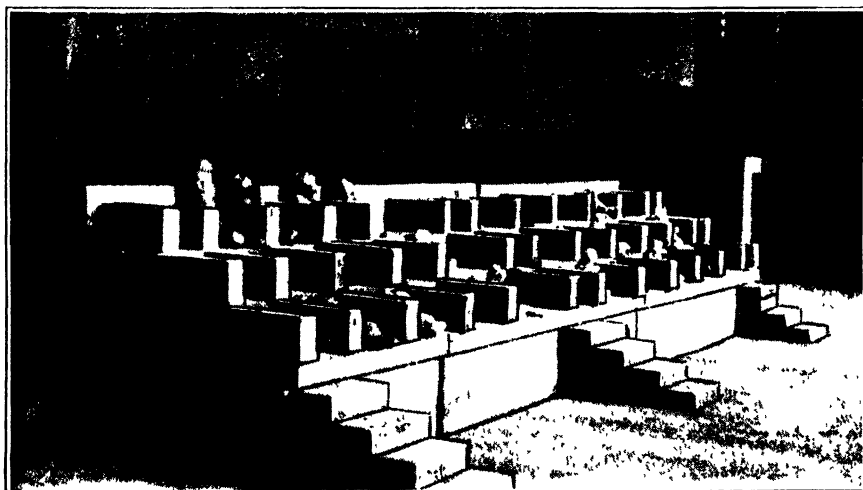


13 An Excursion to the Museum of Natural History Motivated the Building of the

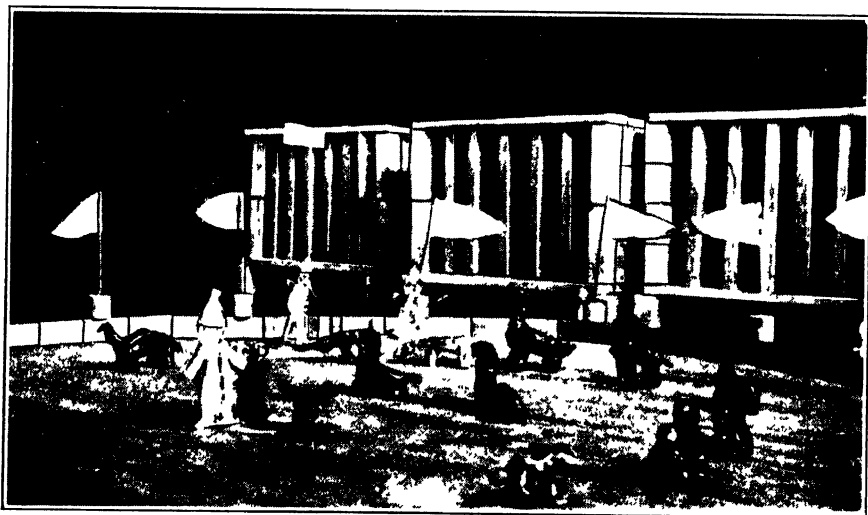


14. Booths of Their Own Construction for Their May Day Exhibit

FORMS SHOWING INTEREST IN DETAILS OF CONSTRUCTION



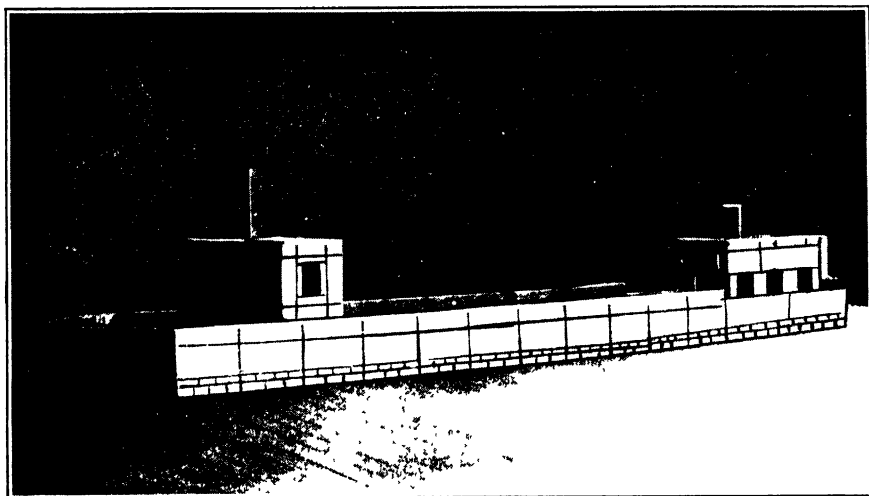
1. Circus Seats.



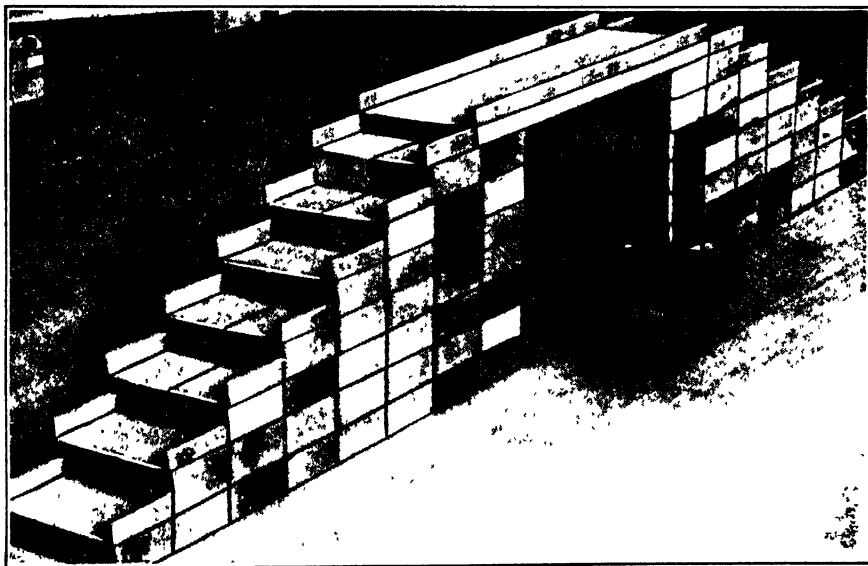
2 Animal Cages and Arena.



3. Street-car Note the window elements.



4. A Freighter.



5. Bridge

## CHAPTER IX

### DIRECTED USE OF TRIANGULAR BLOCKS

Children will play with oblong blocks and boards for some time before they feel the need for a different kind of block. Many teachers are adverse to using the triangular blocks on the grounds that they are difficult to handle and therefore are conducive to nerve strain. This may have been true when the play was limited to the triangular blocks of the small Froebelian Fifth Gift, but this criticism has been met by the introduction of the enlarged and double enlarged triangular blocks.

A house is more complete with its gabled roof; a bridge needs an incline for its approach; a barn, a garage and the oiling rack at the filling station need a ramp. What block, other than the triangular, will function in these places?

If the child has needs such as these for this type of block and if sufficient muscular control has been developed in the preceding plays, there need be no fear of nervousness.

Some of the photographs showing the use of triangular blocks are of buildings constructed before the double enlarged blocks were added to the block equipment. (See photographs 6, p. 163; 12, p. 169; 14, p. 170).

You will note the great number of enlarged or medium sized blocks that were necessary in order to complete many of the roofs. The repetition of fitting them together made a great appeal but the problem of keeping a group of eight or ten children supplied with enough material to satisfy their needs was a perplexing one.

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You will note the great number of enlarged or medium sized blocks that were necessary in order to complete many of the roofs. The repetition of fitting them together made a great appeal but the problem of keeping a group of eight or ten children supplied with enough material to satisfy their needs was a perplexing one.



Also, the time involved not only in the building of the form but in taking it down afterward and replacing the material in cupboards and boxes was a matter of great concern to the teachers.

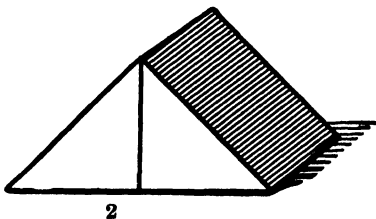
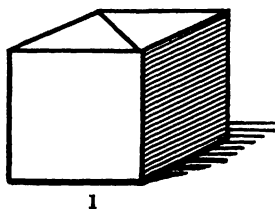
Both time and material have been saved by the introduction of the double enlarged triangular blocks. These include, (a) Halves and quarters of 4" cubes and (b) Halves of square prisms 8" x 4" x 4".

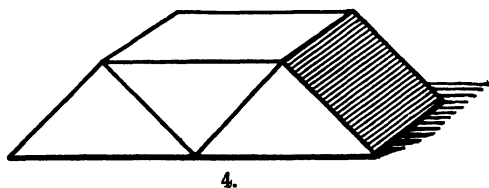
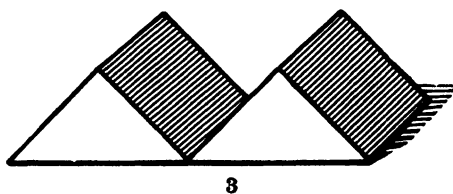
Since the former are of the same relative proportion as the triangular blocks of both the enlarged and small Fifth Gifts, the several sizes may be used together without waste.

The halves of the square prism 8" x 4" x 4" fit better with the double enlarged oblong blocks and make possible a greater variety of slanting surfaces. With these larger triangular blocks, houses are roofed in half the time and with half the labor involved. By the time children are ready to use triangular blocks their ideas will be fairly clear and they will need little or no direction from the teacher. There may be some, however, who will fail to make the best use of them until their attention has been called to certain possibilities. This will, of course, be done in a playful way and, whether or not the child realizes it, he will be gaining a familiarity with principles which will be utilized in later construction.

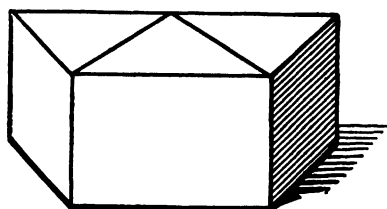
The teacher should know the typical combinations most valuable for building purposes. The following are those most commonly used:

1. *Double Enlarged Triangular Blocks* (halves of 4" cubes)



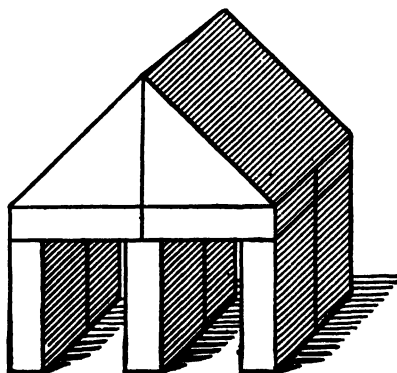
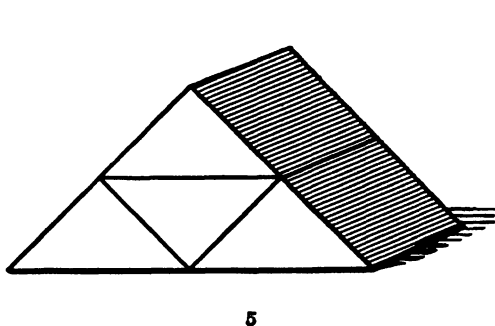


This will appear in later forms as roof on house, hood of automobile.

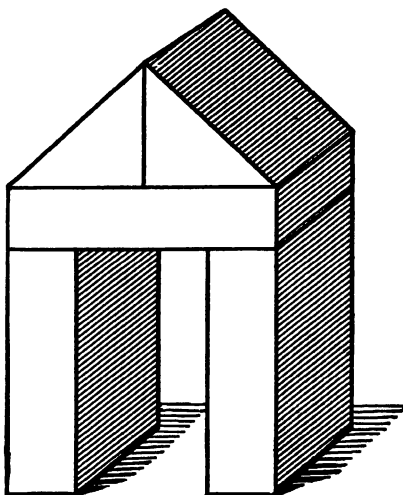


4. (on triangular faces)

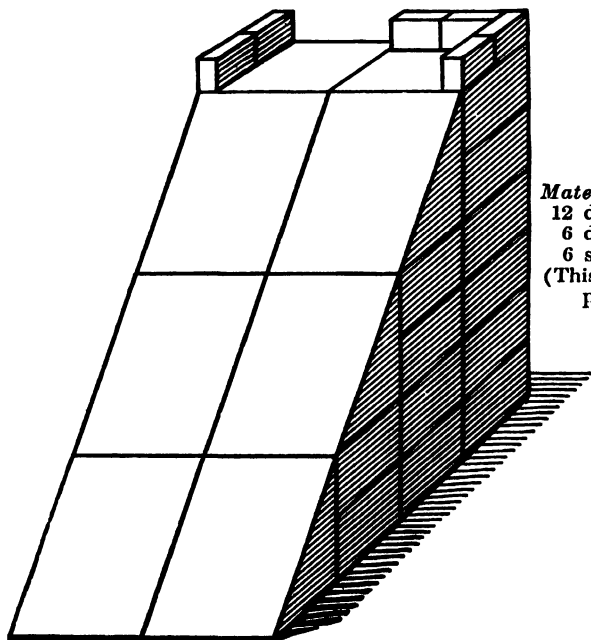
This will appear in later forms as stern of boat, bow-window, etc.



6. Combined with oblong block 4" x 2" x 1".



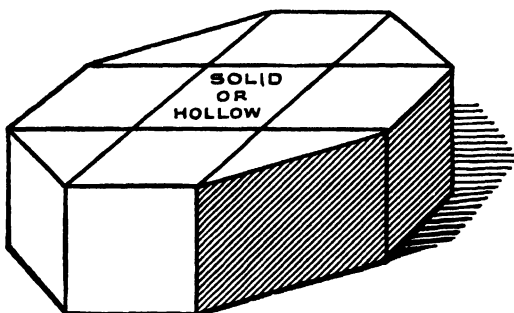
7. Combined with oblong block 8" x 4" x 2".



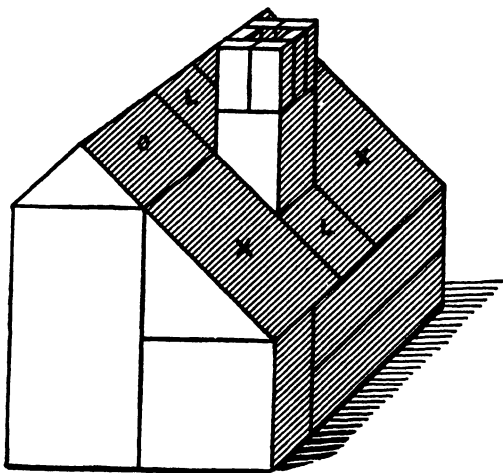
**Materials:**

- 12 double enlarged oblong blocks.
- 6 double enlarged half cubes.
- 6 small oblong blocks.

(This may be used as an approach to a bridge).



9. The principle employed in the construction of a silo, tower, lighthouse.



- V enlarged half-cubes.
- O double enlarged quarter cube.
- X double enlarged half cubes.

10. One way to build a chimney.

(A double enlarged half pillar is used for the chimney. Small oblong blocks are arranged to suggest the opening. Chimney may be made with small plinths and oblong blocks to represent bricks).

## 2. *Double Enlarged Triangular Blocks* (quarters of 4" cubes)

The same principles, discovered in the use of the larger triangular block (half of 4" cube) will apply in the work with the

smaller size. The child will soon realize that he will have to use twice as many of these blocks to get the same results. Unconsciously he is having play experiences with fractions. He will find, too, that one of the quarter cubes will just fit on the 4" cube and also on two of the enlarged oblong blocks (4" x 2" x 1") when the latter are placed on their broad faces with their long narrow faces touching.

3. *Enlarged Triangular Blocks* (halves and quarters of 2" cubes)

The 2" *quarter* cube is not essential, particularly with younger children. The 2" *half* cube is very good for roofs on individual houses made with the enlarged oblong blocks but many prefer to use the 4" quarter cube instead for this purpose.

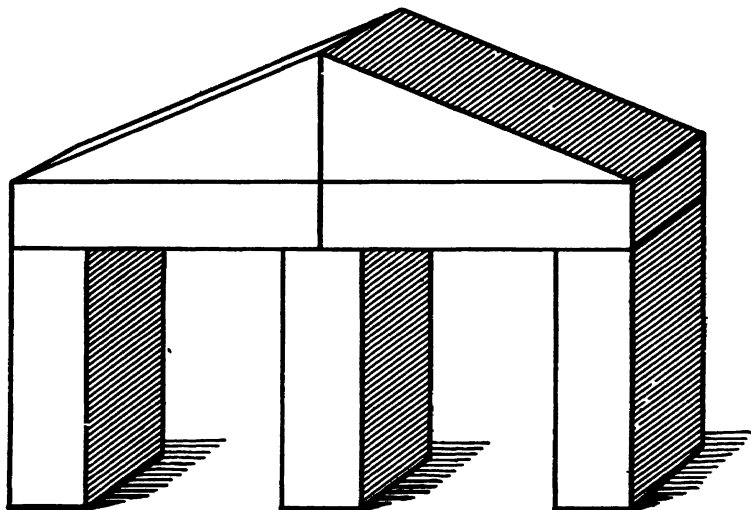
It is sometimes necessary, for the sake of better proportions, to combine the 2" half cube with the 4" quarter cube. For example, note the placing of the chimney in Fig. 10, p. 115.

4. *Double Enlarged Triangular Blocks* (halves of square prisms 8" x 4" x 4").

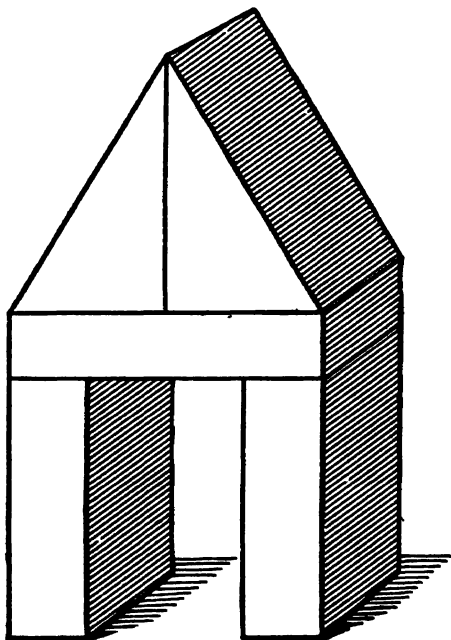
This block has met with great approval. The children seem to prefer it to the half cubes. It is very easily handled and because of its size fewer are needed for a roof or for an approach to a bridge. The low sloping roof of the bungalow; the high, sharp slope of the English and Dutch colonial architecture and the more gradual incline for the bridge are now made possible.

Since this block has been on the market only a very short time, there has been little opportunity for children to experiment with it. The work shown in the photographs is that of teachers in the summer session of the Cleveland School of Education.

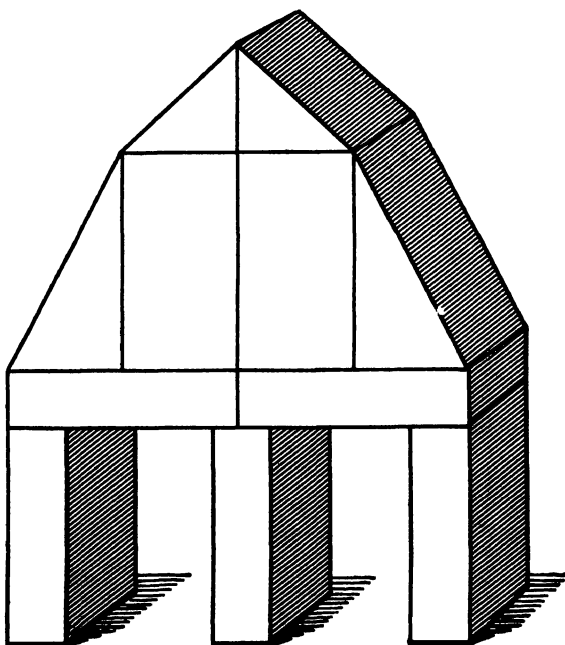
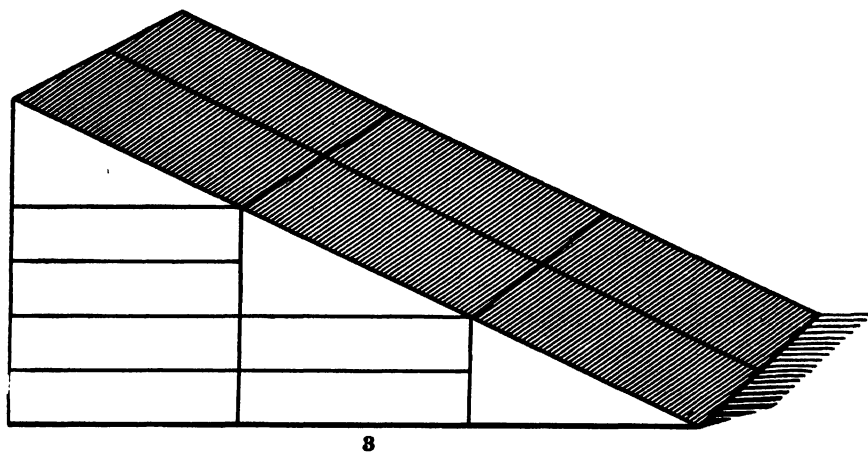
Following are some of the typical positions to be emphasized:



1.



2.



4. Half of Prism  $8'' \times 4'' \times 4''$  Combined with Half of  $4''$  Cube.

## SUGGESTIONS FOR PRESENTING TRIANGULAR BLOCKS TO CHILDREN

Eight of the 4" half cubes may be placed in the pans which have previously been recommended, and the children given an opportunity to combine them in as many different ways as they can. The teacher, knowing the combinations that are most valuable for constructive purposes, will call the attention of the group to the work of any one child that approximates the standards. That each one may have the experience of discoveries made by others, it might be well to have all the children, or at least those who need this type of directed work, repeat what the others have done. This must not be interpreted as meaning that all the various combinations are to be worked out in quick succession and no opportunity given for play with each one. This would savor too much of drill and would be analogous to the old fashioned attempt to learn the multiplication table isolated from the problems or situations in which it would be found.

It is not likely that any two persons would proceed in just the same manner but the following may suggest possible procedures. One child may call his triangular block a chicken coop; another may say that it resembles a tent; another, that it looks like the roof of a house. Any one of these ideas has possibilities for development.

A. The teacher might encourage all to make chicken coops. In their eagerness to make larger and still larger coops they would unconsciously combine the triangular blocks as they will later be combined in the construction of a roof for a house, the hood of an automobile, the bow of a boat, etc.

This play with chicken coops might lead to the construction of other farm buildings, and to the use of other types of manual activity such as drawing, cutting and cardboard construction.



B. Again, let us suppose that the idea of tent meets with approval. This might suggest a play about soldiers or boy scouts. The tents will be arranged in an orderly fashion; larger and still larger tents will be made. This, together with all the other activities connected with play about tents will hold the interest of the children for several days.

C. The idea of roof would naturally lead to the making of houses, by first placing a triangular block on a cube and then gradually combining these smaller units until larger ones are obtained. Or, the houses previously made by combining walls and windows may now be repeated and the triangular blocks added to make the roof.

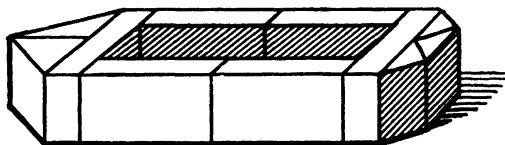
D. Still another child, placing his block in a different position may discover that it makes a good slide or it may be that a playground experience would give rise to the desire to make a slide and the triangular block, as appropriate material for the expression of the idea, would accordingly be selected.

In the first instance the idea develops from the arrangement of the blocks and in the second, the arrangement is in response to the idea.

Slides of various heights and widths will develop; slides with the addition of steps to reach the top; slides placed against walls made of blocks; slides connected with long run-ways, bridges and tunnels until we have a real roller-coaster with all the hazards involved.

Whether or not the child knows it, he is learning to master this new block and is becoming familiar with a principle that will again be utilized in the roof of his house, in the approach to his bridge, his barn and garage.

E. If the form previously made with oblong blocks and called a box or trough is now repeated and the triangular blocks placed on their triangular faces at either end, we have the suggestion of a row boat. An impetus is now given to the reproduction of all experiences connected with the water.

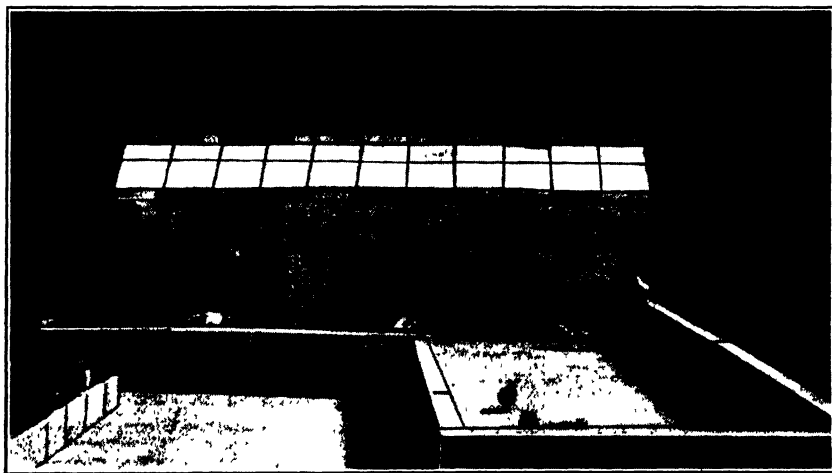


Launches, freighters, house-boats, steamers follow one after the other. These, in turn, call for piers, docks, lighthouses and bridges and whether we will it or not, we find ourselves correlating this work in construction with language, art, music, games, safety, hygiene and even science.

The "leading on" possibilities are endless and it is hoped that the reader will be interested in developing some of these ideas with her children.

## CHAPTER X

### CHILDREN'S CREATIVE BUILDING—SHOWING THE USE OF TRIANGULAR BLOCKS

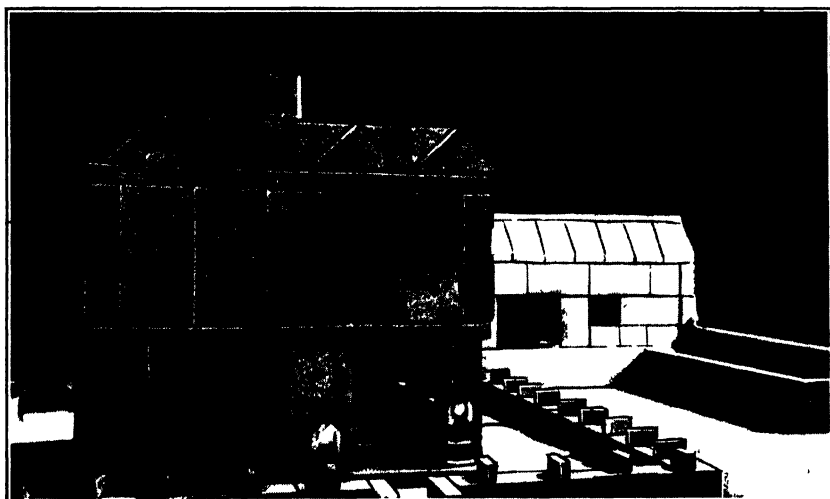


1. A Barn.

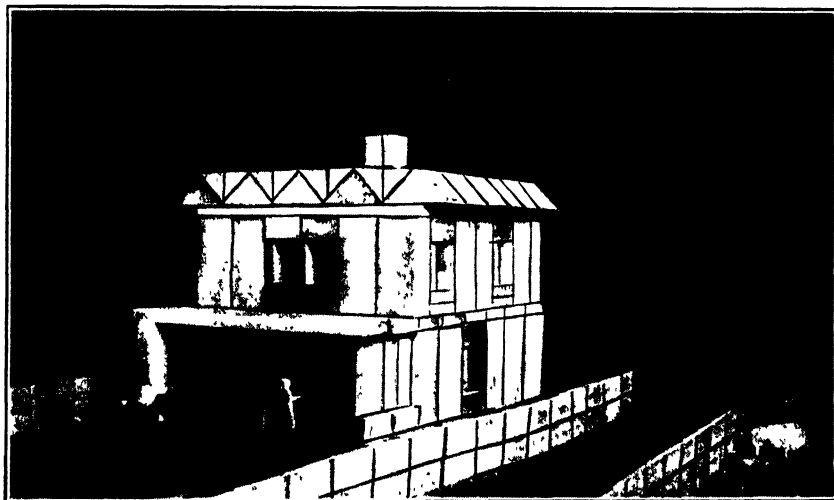
Santa Claus brought me my horses  
With coats all shiny and sleek  
Left them right under my stocking  
While sister and I were asleep!

And I was the farmer who owned them—  
I built them a barn on the floor  
With windows and stalls and a haymow—  
And a wider-than-usual front door!

D. P.

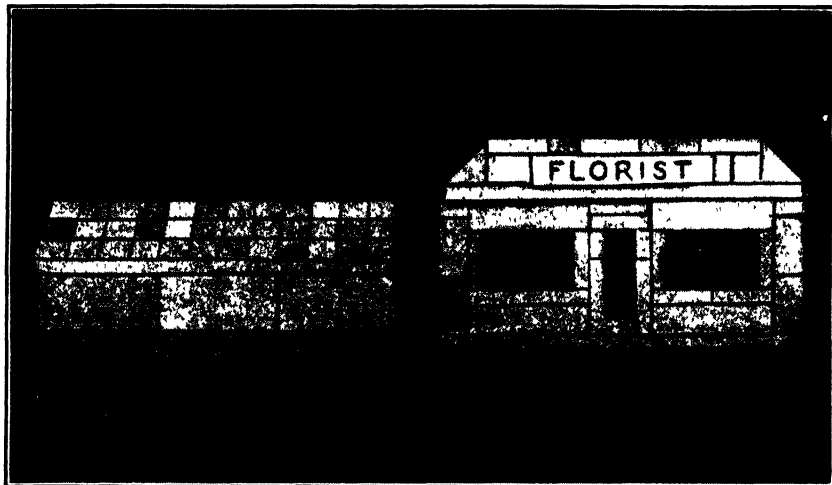


2. Farmer's House and Barn—Children were more interested in the construction of the roof than in the window element. They preferred to use toy people and toy animals furnished by the teacher.

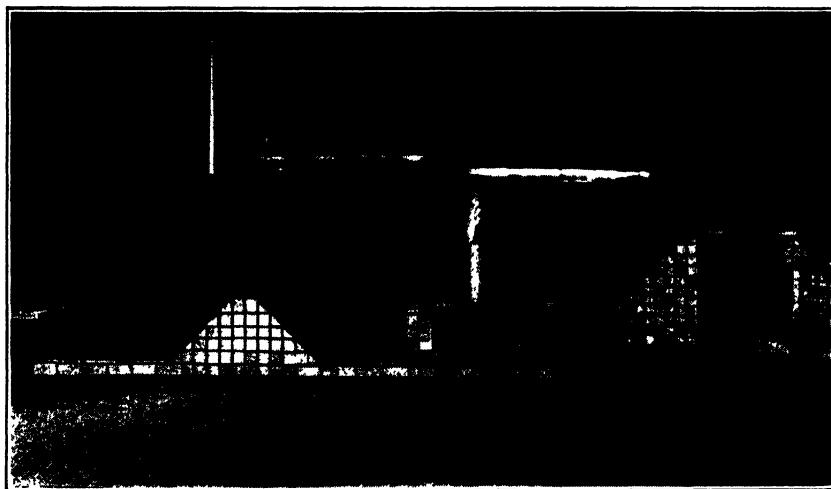


3. Later the house with windows developed. Clay people were added and clay animals were made for the pasture.

## BLOCK BUILDING



4. Greenhouse and Florist Shop.



5. A Roller Coaster

This was built before the double enlarged blocks were added to the block equipment. Much time and labor would have been saved had larger blocks been used although the repetition in the placing of the two-inch blocks afforded great satisfaction at the time.

The larger floor blocks not only save time and labor but lend themselves more readily to play-activities.

## CHAPTER XI

### DIRECTED USE OF OBLONG BLOCKS, PLINTHS AND PILLARS

We have used up to this time cubes, boards, oblong and triangular blocks of various dimensions. We found the forms made with oblong blocks of different sizes a great improvement upon the crude forms made with the cubes, but there were times when even the oblong blocks were too long or too wide. We have wished for blocks that were half as long or half as wide, in order to make our buildings in better proportion. The pillars and plinths (double enlarged, enlarged and small) will meet this need.

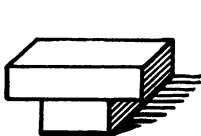
Because of the unlimited possibilities for number problems, many of the uses here illustrated will appeal to the older child hence the value of these blocks in the first and second grades. The interest shown by teachers in the solution of rather complicated problems in construction has confirmed the writer in the belief that these blocks may also be used to advantage in connection with the history, geography, art and manual training in even higher grades.

It was suggested in an earlier chapter that pillars and plinths be reserved for a later use. We are assuming that the play with the other blocks has prepared the child for this added material which the wise teacher will place on the cupboard shelves as soon as she sees the need for it arising or whenever she feels that the suggestion that it might be used will help the child over some difficulty. Detailed directions for the use of these blocks such as

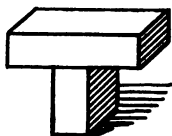
were given for the constructive elements with the oblong blocks will not be necessary at this point.

It is enough to suggest that the reader combine one oblong block and one plinth in as many different ways as she can.\* The combinations most valuable for constructive purposes are as follows:

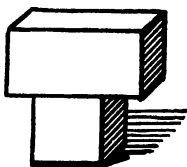
1. The broad face of the oblong block touching the square face of the plinth.
2. The broad face of the oblong block touching the oblong face of the plinth.
3. The long narrow face of the oblong block touching the oblong face of the plinth.
4. The end of the oblong block touching the oblong face of the plinth.



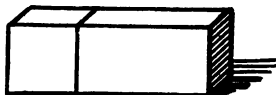
1.



2.



3.



4.

If the teacher for her own development will take each one of these elements, repeat it as many times as she has blocks and then combine them in as many ways as possible she will begin to appreciate the added possibilities and will realize how much better prepared she is to note wherein forms may be improved and thereby help the child to judge his own results more intelligently.

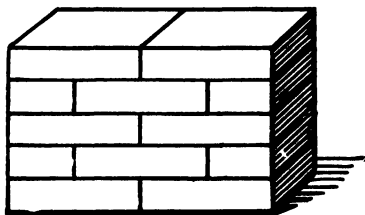
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\* Fulmer, Grace, "The Use of the Kindergarten Gifts," page 105 and pages 218-220.

## PLINTHS ADD DETAILS TO FORMS

With the addition of the plinth one may make walls resembling those made of brick and stone; vary the height of the windows; add decorative features to porch railings and more pleasing details to furniture forms.

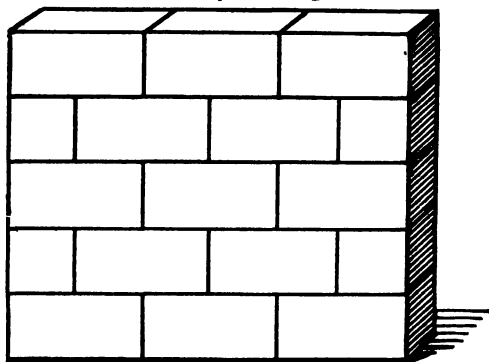
The following illustrations will show some of the typical uses:



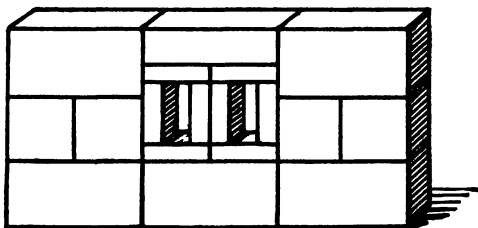
Brick Wall.

### Possibilities:

- a. Increase the length and height.
- b. Add the steps or slide previously made.
- c. Insert door and windows.
- d. Make four walls.
- e. Place on a foundation.
- f. Add boards for flat roof.
- g. Add triangular blocks for gable roof.
- h. Add porch and chimney.
- i. Make house two or more stories high.
- j. Use this arrangement for a fireplace, and for chimney for large houses.



Wall. (Blocks on long, narrow faces)



Section of Wall—Showing how window may be fitted in.

### Materials:

- 5 enlarged oblong blocks
- 4 enlarged plinths.
- 1 enlarged pillar
- 8 small oblong blocks.

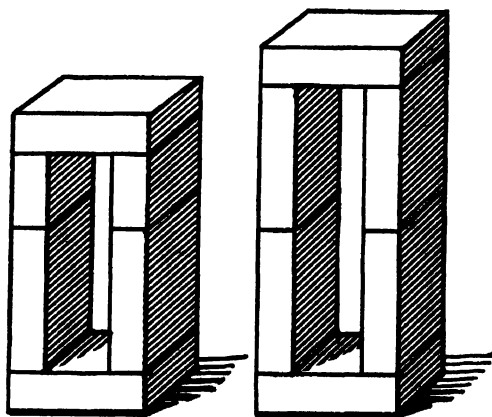
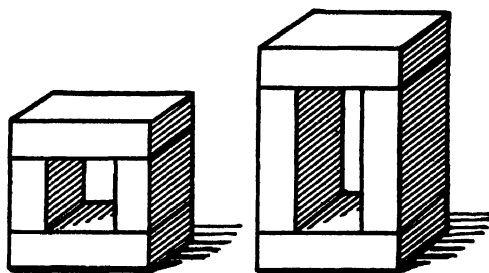
or

Double enlarged blocks for wall.  
Enlarged blocks for windows.

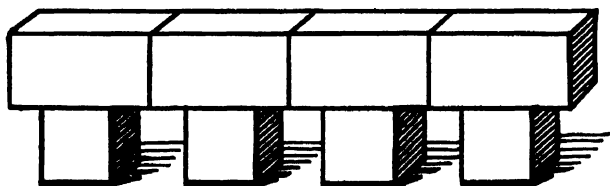
Vary the size to fit on foundations  
8" x 10";  
10" x 12";  
12" x 12".



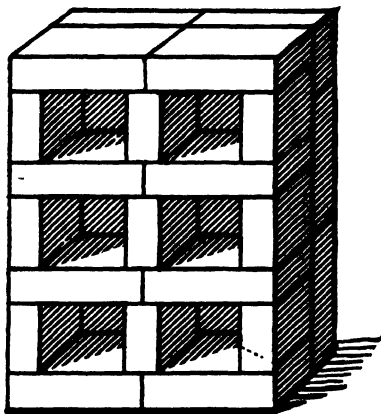
## BLOCK BUILDING



Windows—Showing how different heights are made possible by the addition of the plinth. Many number problems arise here.



A Porch Railing.



Book Shelves.

*Materials:*

- 16 oblong blocks (any size).
- 9 plinths (same relative size).

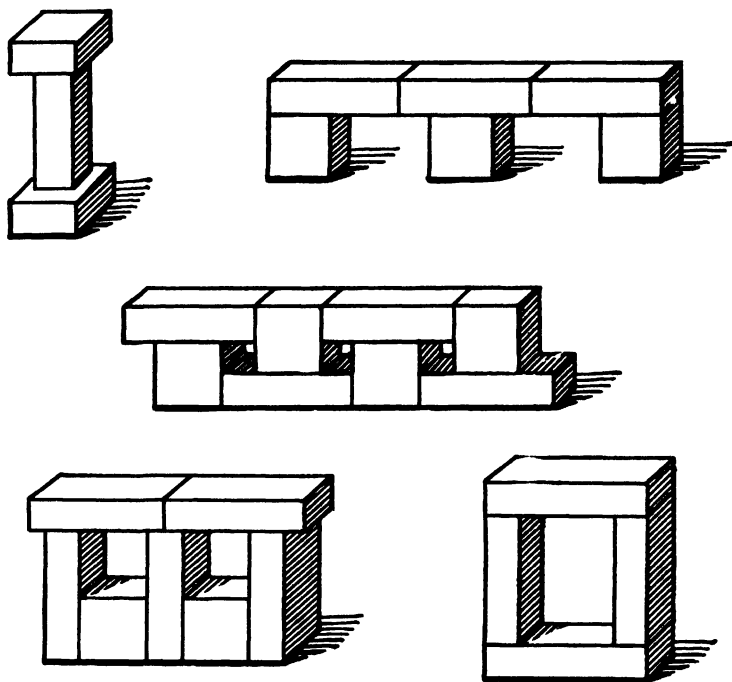
*Possibilities:*

- a. Make several sections and combine.
- b. Change height and width of shelves.
- c. Add fire place between sections.
- d. Add seats.



Directed Building with Oblong Blocks and Plinths.

## TYPICAL COMBINATIONS OF PLINTHS AND PILLARS



## PROBLEMS—USING OBLONG BLOCKS, PLINTHS AND PILLARS

The children may be asked to select from their pan or box a given number of certain types of blocks and to make a form designated by the teacher. For example, "With *six* plinths and *three* oblong blocks you may make *three* chairs." This will test their knowledge of both number and form. The following are examples of some of the more advanced problems. These may also be given in terms of inches to children who are working with this unit of measure.

## CHAIRS FOR THE THREE BEARS

### 1. Baby Bear's Chair.

4 small oblong blocks.

2 small plinths.

1 small pillar.



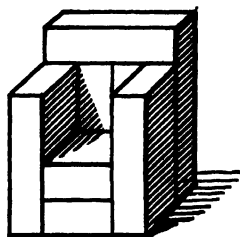
1.

### 2. Mother Bear's Chair.

4 enlarged oblong blocks.

2 enlarged plinths.

1 enlarged pillar.



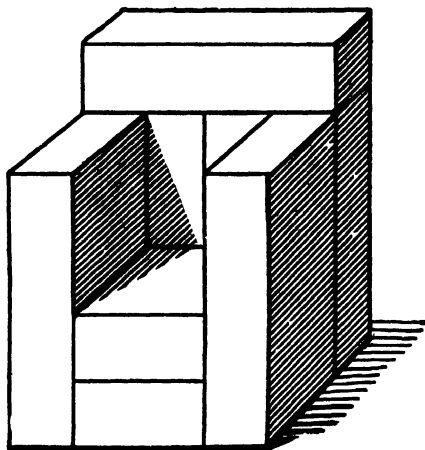
2.

### 3. Father Bear's Chair.

4 double enlarged oblong blocks.

2 double enlarged plinths.

1 double enlarged pillar.

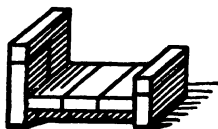


3.

## BLOCK BUILDING

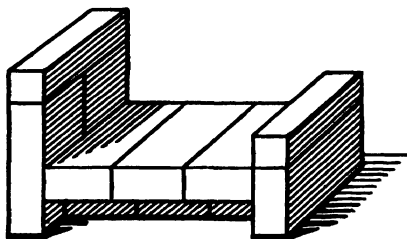
## BEDS FOR THE THREE BEARS

1. Baby Bear's Bed.  
 6 small oblong blocks.  
 3 small plinths.  
 2 small pillars.

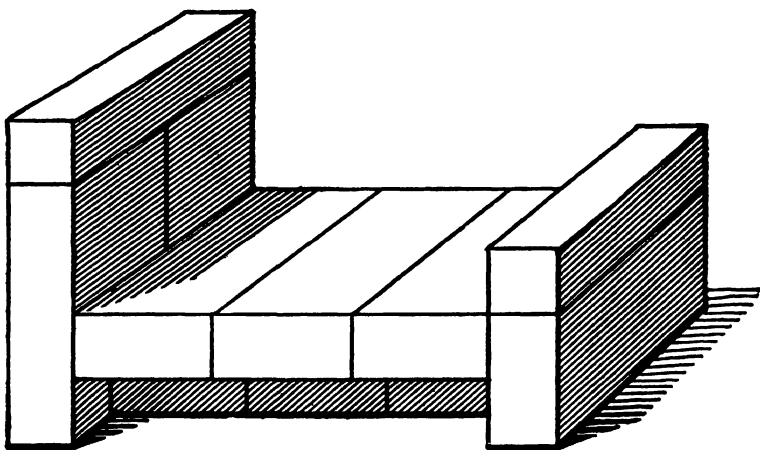


1.

2. Mother Bear's Bed  
 6 enlarged oblong blocks.  
 3 enlarged plinths.  
 2 enlarged pillars.



2.



3.

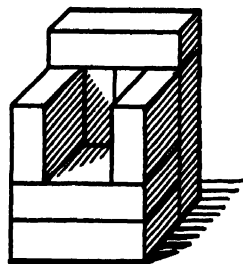
3. Father Bear's Bed.  
 6 double enlarged oblong blocks.  
 3 double enlarged plinths.  
 2 double enlarged pillars.

Note.  
 Three plinths are in a row from right to left.  
 Three oblong blocks are placed on top—  
 from front to back—  
 on their broad faces.

## CHAIRS OF DIFFERENT DIMENSIONS

### 1. Arm-chair.

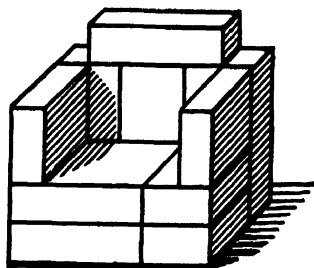
- 4 double enlarged oblong blocks.
- 2 double enlarged plinths.
- 1 double enlarged pillar.



1.

### 2. Bench with Arms.

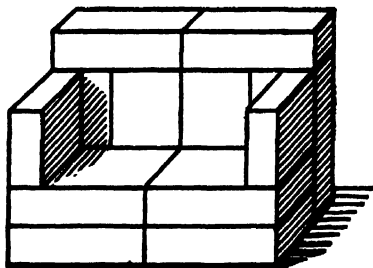
- 5 double enlarged oblong blocks.
- 4 double enlarged plinths.
- 1 double enlarged pillar.



2.

### 3. Longer Bench with Arms.

- 8 double enlarged oblong blocks.
- 2 double enlarged plinths.
- 2 double enlarged pillars.



3.



4. Grocery Store.

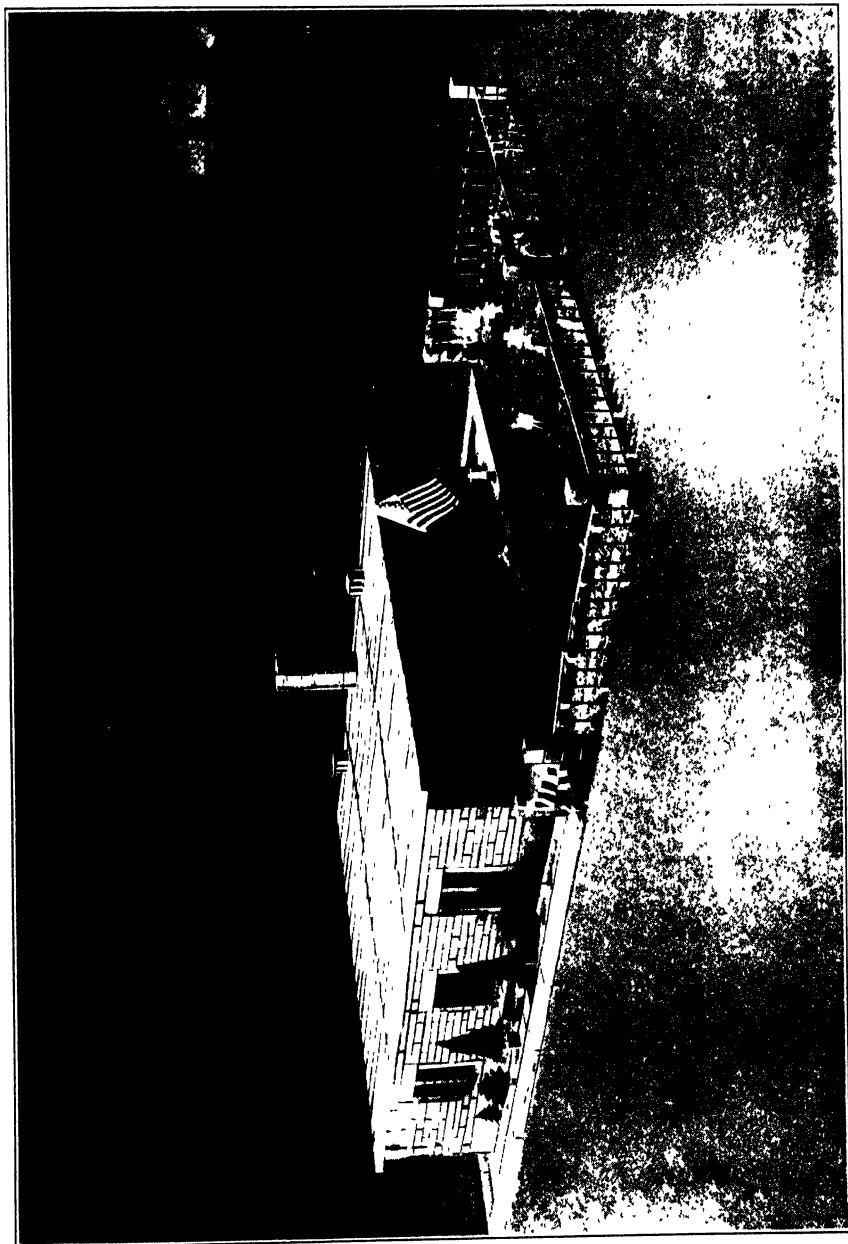
Timmy and I built the grocery  
With counters all straight in a row.  
There were shelves way up to the ceiling  
And bins for potatoes below!

Tim wore a long grocer's apron  
And weighed butter and sugar and tea--  
And mother came in with her basket  
To buy cookies and apples from me!

D. P.



5. Doll House—Note the use of “constructive units.”

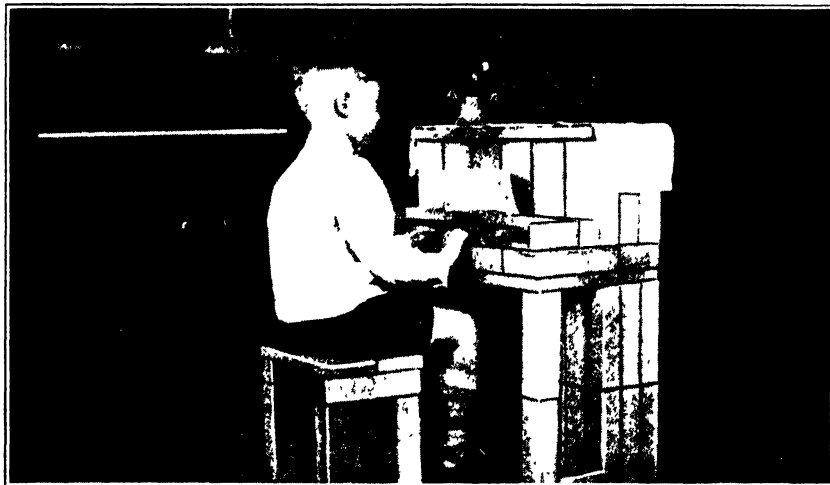


6. A Reproduction of Their Own School Building—Wm. Brett School. Note the placing of the oblong blocks to represent a brick wall—also the use of the window element.





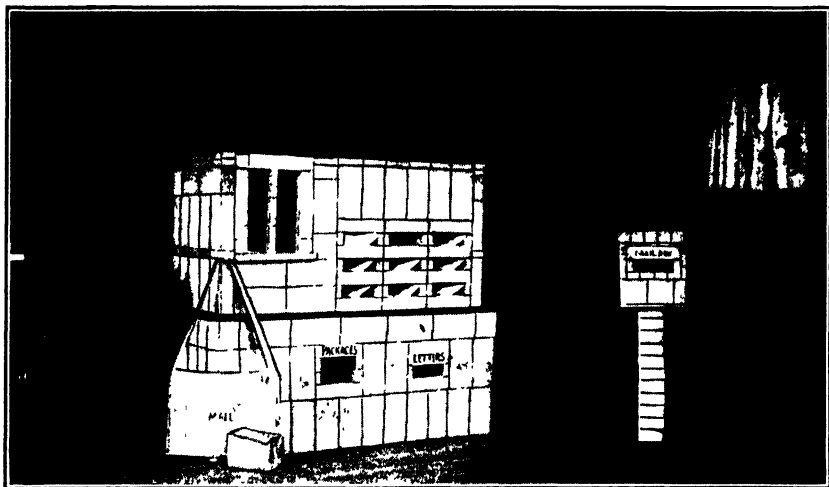
*Forms Showing the Use of Oblong Blocks, Plinths, Pillars and Boards*



1. Creates the Instrument for His Own Musical Expression.



2. "Period" Furniture.



3. Post Office.

A kindergarten table 40" long x 18" wide x 21" high was used as the foundation. Note that the table legs are obscured by the double enlarged blocks and the top of the table becomes the shelf inside. The words "Stamps" "Packages" "Letters" indicate the purpose of the various windows. The mail box, the postman's bag and cap, letters and valentines are in evidence.

### A UNIT OF WORK

The building of the post office is a fairly good illustration of the way in which several activities may be correlated in the development of one, showing a "unit of work."

*The Situation*—The children in a certain kindergarten were preparing for Valentine's Day and, in the course of their discussion, the question was raised as to the delivery of the valentines. This naturally led to a conversation in which the postman was the central figure. The children were asked to think about him and to be ready on the following day to tell more about him. When the time arrived every child had some contribution to make.

*Language*—Every one had seen a postman. He wore a gray suit—wore a gray cap—carried a bag—rang people's doorbells—

put letters in the mail box on the porch—unlocked big boxes and took mail out—sometimes carried mail in a basket or box on a sled—didn't wear an overcoat either—was out in all kinds of weather—had to walk a long way—never stopped to visit along the way—came to the house once a day—came to some houses twice a day—went to father's office four times a day—was very careful and never allowed any one else to carry the mail—knew just where to leave every letter and paper and package—sometimes he carried a whistle—sometimes mother had to write her name in a book when he delivered a letter—once mother had to give the postman two cents because the lady who sent the letter put only one stamp on it and the letter was so heavy the postman had to put another stamp on it—some stamps were red, some blue, some other colors—the postman had to go to the post office to get all the letters so the people could stay at home and get their mail without having to go to the postoffice.

*Objectives in the Mind of the Teacher*—This and much more came from the children. The teacher's comments were in the nature of emphasis of the points which she wished every child to get in order to appreciate the work of this important public servant. She stressed his great responsibility; his honesty; his care and accuracy; his devotion to duty; his long hours; his physical endurance; the source of his compensation; the need for stamps; the need for accuracy in directing the envelope, et cetera.

*Excursion*—An excursion was made to the post office and attention called to the essential features of its construction; the several windows where persons called for mail or purchased stamps; the individual letter or lock boxes; the slots for letters and larger openings for packages; the long tables or counters where one might write; the mail boxes on the street corners as well as the mail wagons.

The children then decided they could build a postoffice. (See photograph)

*Planning*—They discussed the materials most appropriate for its construction (blocks being the final choice)—the best place in the room to build it—how large they could afford to make it—what blocks would be best to use—how many and which children should be selected to work on it—some of the things they would have to think of to make it look like a real post office—some things other children might make while the building was going on.

*Manual Activities* (cutting, pasting, folding, cardboard construction, crayoning, sewing)—Suggestions for mail bags, postman's cap, envelopes, stamps, boxes to hold presents, valentines and pictures came in quick suggestion.

*Arithmetic*—Quantitative thinking was stressed in calculating the number of blocks needed; the difference in size and shape of the various windows and openings for letters and packages; the number of lock boxes in each row; the number of rows; discrimination as to large and small packages; high and low openings.

Similar points were emphasized in connection with the making of the other things for the postoffice.

*Pictures, Verses, Songs*—A picture of a postman delivering a letter stimulated the telling of original stories. Short verses and songs about the postman were learned.

*Safety*—Safety from different points of view was stressed—

a. Care in the construction of the building, so no child would be hurt by falling blocks.

b. Strength of the building.

c. Protection of the mail in that postman never left mail on the porch. Boxes must be provided.

d. Sufficient postage to insure delivery of mail.

*Social Science*—Through a discussion of the transportation of mail by train, boat and airplane, a faint notion of distance was awakened and the children began to feel an interest in places far removed from their own immediate environment. Much interesting conversation regarding customs in other lands followed.

When the work was completed a postman was chosen to pass the mail through the window to those who called at the office.

*Games*—Children would ask for letters for themselves, giving their name, street and number (this being among the objectives in the kindergarten curriculum) or would get the mail for a neighbor or friend.

The following Postman game\* made a great appeal. One child, with cap and bag for postman, delivers three letters to any three children in the ring. When he blows his whistle, all put hands behind them. Ask a child to name one who received a letter. To name two and finally all three. This is a good memory test. As children gain in proficiency increase the number of letters distributed.

*Knowledge*—Through this play experience the children gained not only valuable information regarding the postman and his duties but obtained other useful information in connection with unrelated subject matter already referred to.

*Personal and Social Habits*—Habits of accuracy, perseverance, responsibility, dependability, coöperation and service were stressed. Interest was created in those habits and qualities which merit trust and confidence.

---

See the Kindergarten and First Grade Magazine—Feb., 1922—Adele Hall, Denver, Colorado.

*Emotional Attitude*—Last and most important of all was the attitude of respect, appreciation and gratitude created not only toward the postman but toward all who serve public needs. At this age it will find expression in a mere thank-you but if the feeling is kept alive in the hearts of the youths who pass through our schools may there not be a revival of the recognition of “the dignity of labor”?

## CHAPTER XIII

### THE ARCH

Arches of two sizes, double enlarged and enlarged, have recently been added to the block equipment. In combination with the oblong blocks and pillars of corresponding sizes they lend themselves to pleasing and stable forms. Children are fascinated with them.

#### *Directed Use of the Arch*

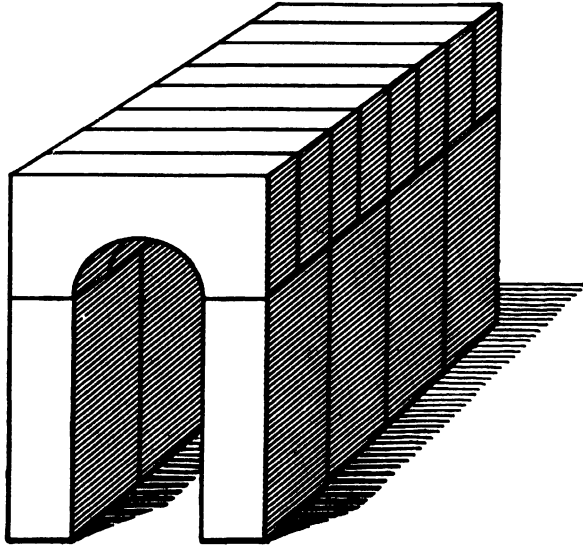


Fig. 1. An Arcade.



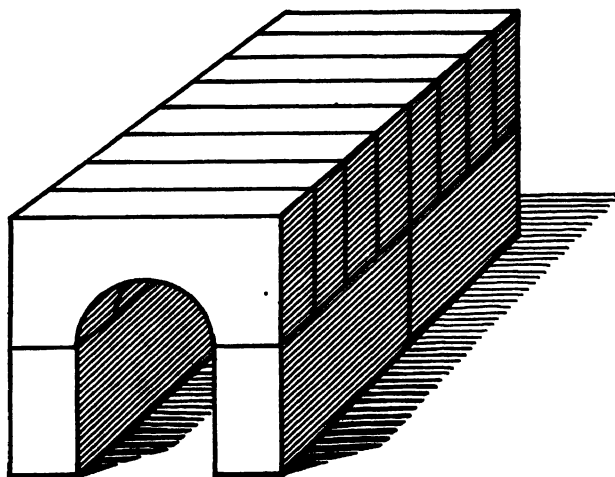


Fig. 2. Tunnel.

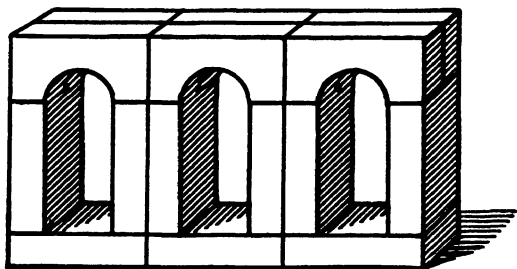


Fig. 3.

*Materials*

- 6 enlarged arches.
- 9 enlarged oblong blocks.

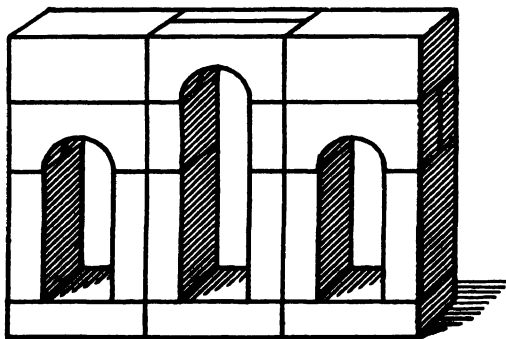


Fig. 4.

*Materials*

- 6 enlarged arches.
- 9 enlarged oblong blocks.
- 2 enlarged plinths.
- 2 double enlarged half-pillars.

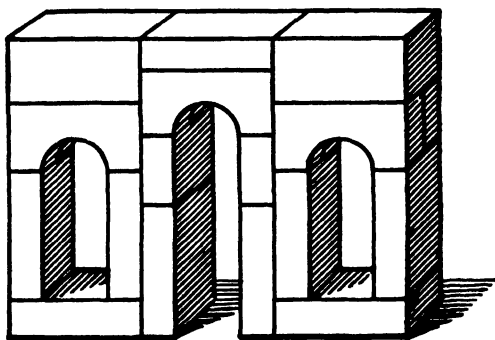


Fig. 5. (Same blocks as in Fig. 4.)

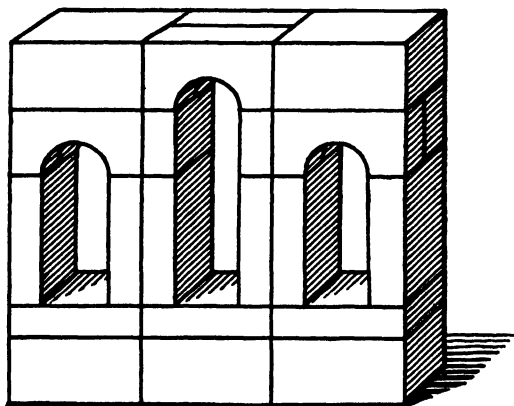


Fig. 6.

## *Materials*

- 5 double enlarged half-pillars.
- 9 enlarged oblong blocks.
- 2 enlarged plinths.
- 6 enlarged arches.

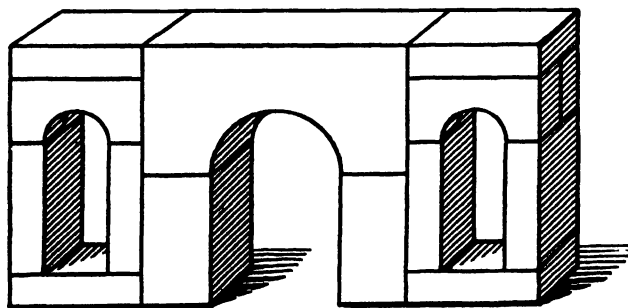


Fig. 7.

## *Materials*

- 8 enlarged oblong blocks.
- 2 double enlarged half-pillars.
- 4 enlarged arches.
- 1 double enlarged arch.

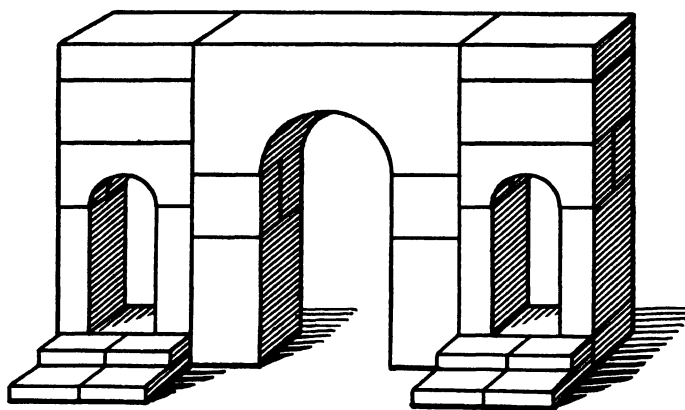


Fig. 8.

*Materials*

- |                                 |                         |
|---------------------------------|-------------------------|
| 8 enlarged oblong blocks.       | 4 enlarged arches.      |
| 4 double enlarged half-pillars. | 1 double enlarged arch. |
| 4 enlarged plinths.             | 4 small oblong blocks.  |
|                                 | 4 small pillars.        |

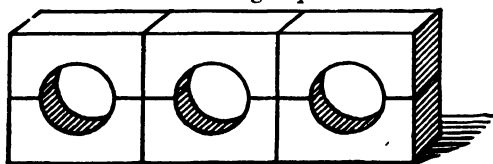


Fig. 9. Portholes

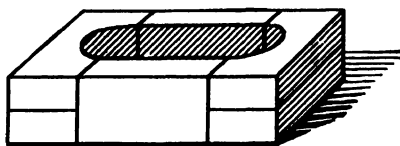
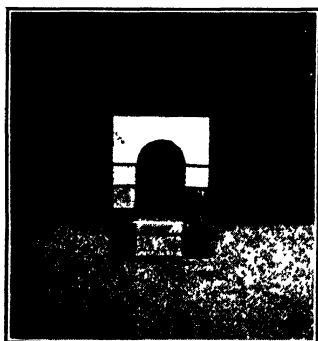
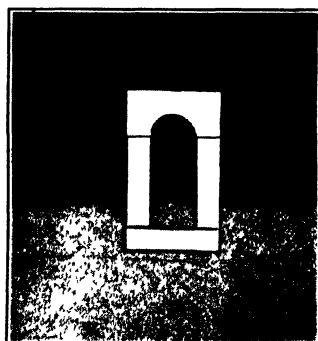


Fig. 10. Bath-tub

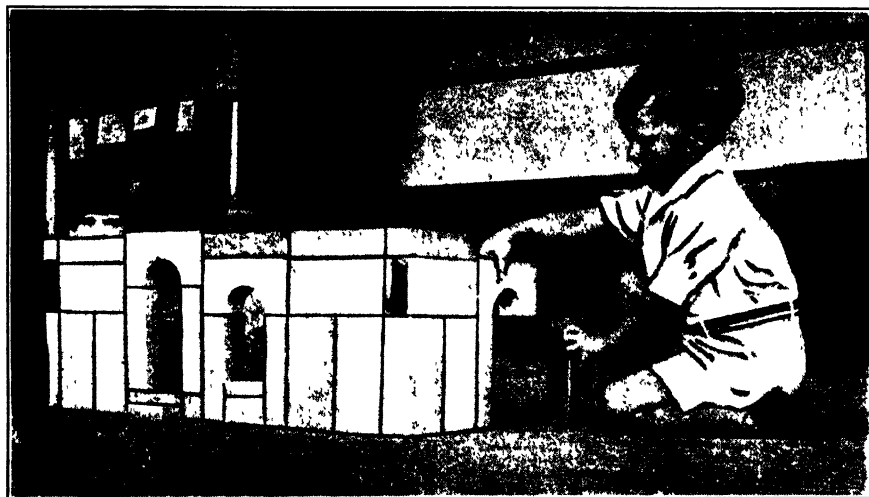
*Children's Creative Building—Showing Use of Arches*

1. Arch Combined With Cubes.

2. Pillars Were Quickly Substituted  
for the Cubes

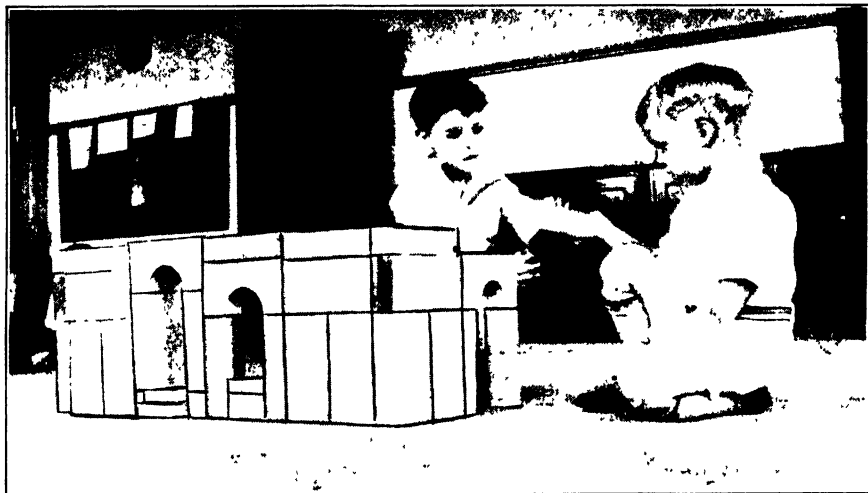


3. A Definite Plan in Mind.



4. As the Building Grows More Help Is Needed.

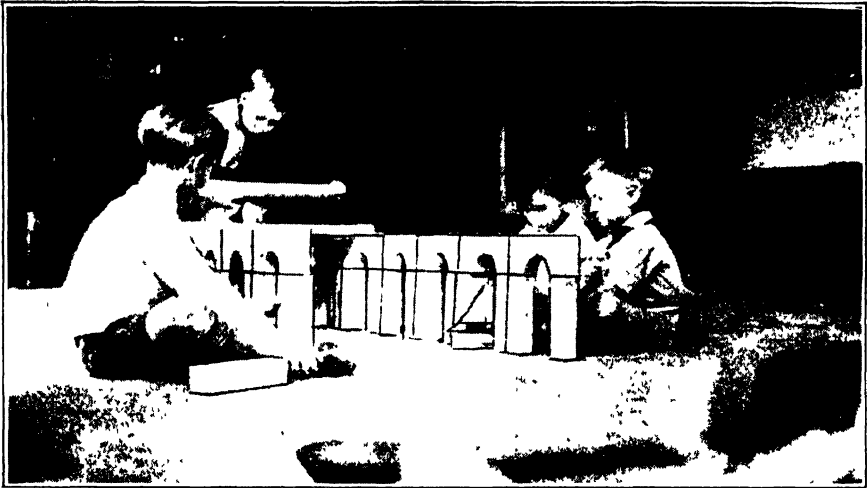
## BLOCK BUILDING



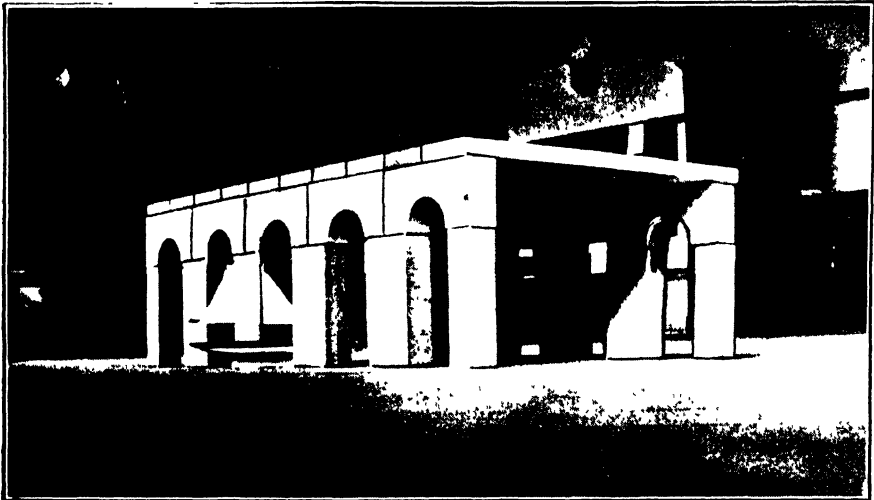
5. There Is Always one Master Workman.



6. Still in Process of Construction



7. Arches Suggest Bridge at Once.



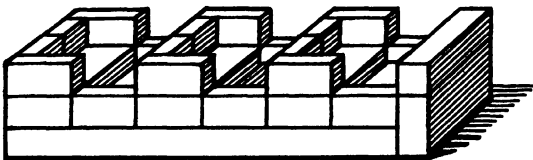
8. The Bridge Completed.

## CHAPTER XIV

### DIRECTED FORMS SHOWING THE USE OF VARIOUS TYPES AND SIZES OF BLOCKS (for Training Students)

With the exception of the enlarged and double enlarged half pillars, double enlarged pillars and perforated boards, use of all the blocks recommended in the list of minimum equipment for both kindergarten and first grade has been shown. The enlarged half pillar is equal to two of the *small* oblong blocks with their broad faces touching and the double enlarged half pillar is equal to two of the *enlarged* oblong blocks with their broad faces touching. Therefore, wherever two oblong blocks in this position will function, the half pillar will be found valuable in that fewer blocks will be used and stability of the form increased.

The perforated boards may be used for roofs on houses but are intended primarily for wagons, street-cars and trains. The child will find a way to fasten the dowel rods and discs (axles and wheels) to the board. The simplest way is to insert a heavy cord through the perforations of the board and tie around the axle. A thin wire may be run through the small perforation in the end of the dowel rod to keep the wheel from slipping off.

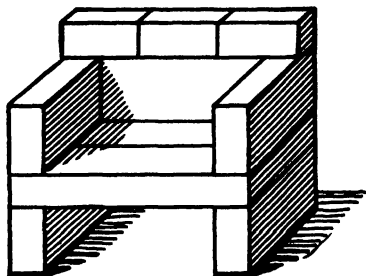


1. A Roller-Coaster.

#### Materials

- 1 board 12"x4"x1".
- 4 enlarged oblong blocks.
- 1 enlarged pillar.
- 15 small oblong blocks.
- 3 small plinths.
- Discs for wheels may be added.

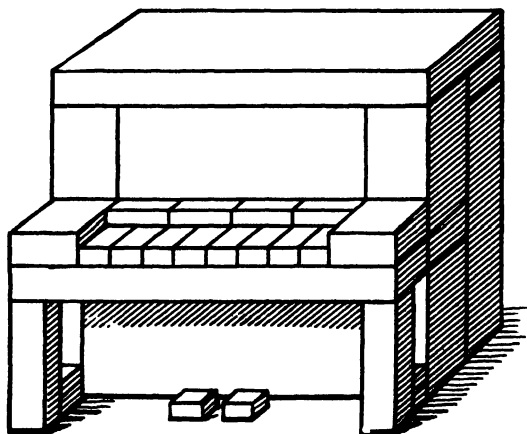
Note: Double enlarged and enlarged blocks may be substituted for the enlarged and small blocks. Two boards 24" x 4" x 1" will then have to be used for the floor.



2. Arm-chair.

*Materials:*

- 5 double enlarged oblong blocks.
- 2 boards 12" x 4" x 1".
- 3 double enlarged half pillars.



3. Piano.

*Materials:*

- 5 double enlarged oblong blocks.
- 2 boards 12" x 4" x 1".
- 4 double enlarged half-pillars.
- 3 enlarged oblong blocks.
- 2 enlarged pillars.
- 2 enlarged plinths.
- 8 small oblong blocks for keys.
- 4 small pillars.
- 6 small plinths.

*Piano bench:*

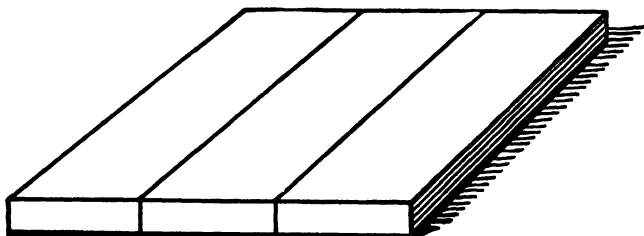
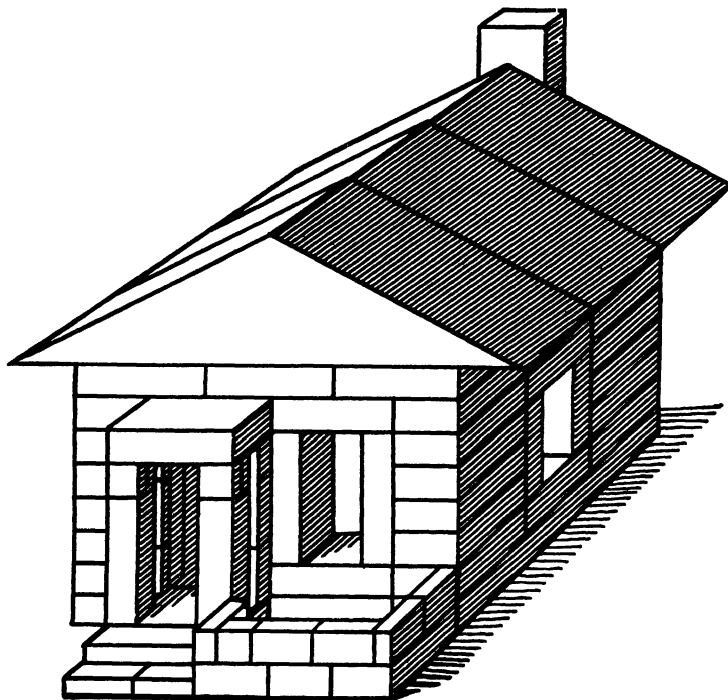
- 1 enlarged oblong block.
- 2 enlarged plinths.



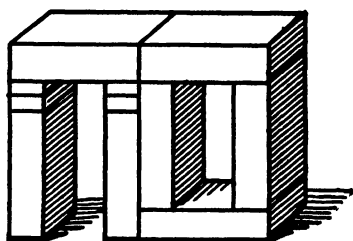
## BLOCK BUILDING

## A COTTAGE

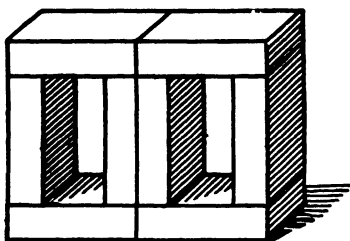
Note. The detailed plan of this little cottage will show the utilization of many of the elements previously illustrated.



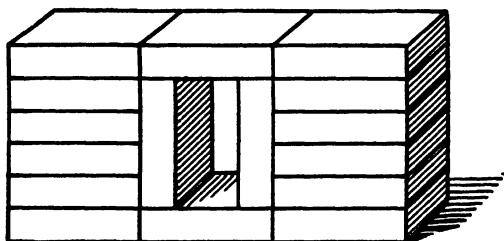
Floor. 3 boards 12" x 4" x 1".



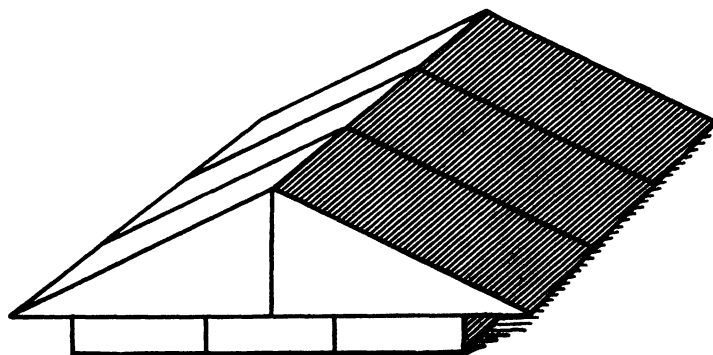
Front Wall.  
7 enlarged oblong blocks.  
4 small oblong blocks.



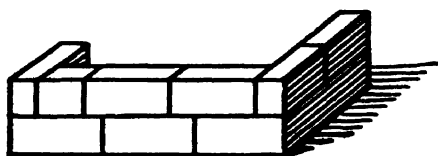
Rear Wall.  
8 enlarged oblong blocks.



Side Wall.  
16 enlarged oblong blocks.

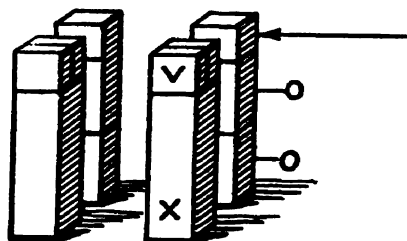


Roof. 3 boards 12" x 4" x 1". 6 triangular blocks. (Half of square prism 8" x 4" x 4".)



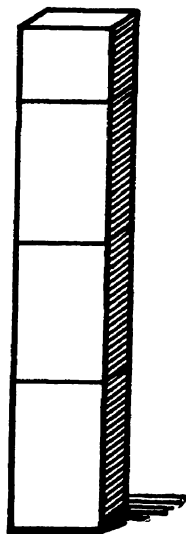
Porch.

3 enlarged oblong blocks.  
5 small oblong blocks.  
1 small plinth.



Supports for roof over step.

1 small plinth.  
o 1 small oblong block.  
o 1 small oblong block.  
x 1 enlarged pillar.  
v 2 small plinths.



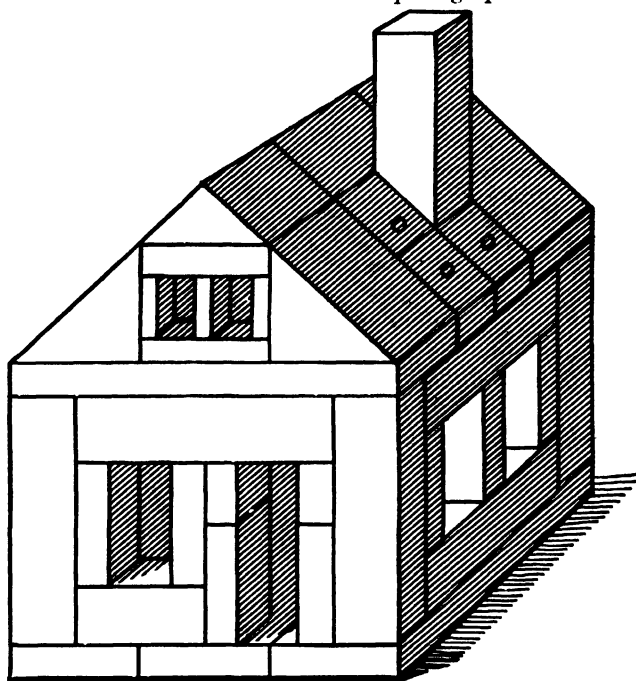
Chimney.

3 enlarged oblong blocks.  
1 enlarged plinth.

## VARIOUS TYPES AND SIZES OF BLOCKS 157

### A SECOND TYPE OF HOUSE

From this and the cottage preceding have developed the houses appearing in later photographs.

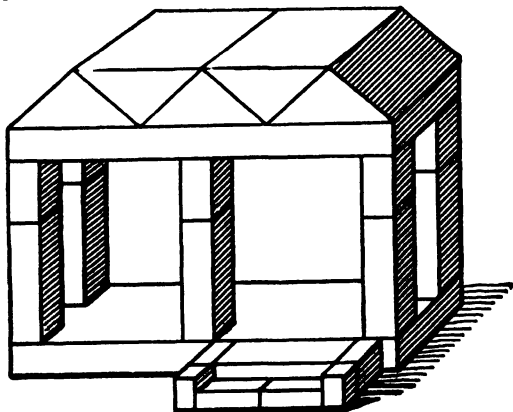


#### *Materials*

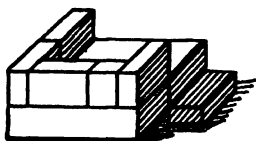
- 6 boards 12" x 4" x 1".
- 4 double enlarged oblong blocks.
- 8 double enlarged pillars.
- 2 double enlarged half pillars.
- 5 double enlarged half cubes.
- 3 double enlarged quarter cubes.
- 03 enlarged half cubes. (2" cube)
- 6 enlarged plinths.
- 4 enlarged pillars.
- 12 enlarged oblong blocks.
- 6 small oblong blocks.

#### *Materials:*

- 2 boards 12" x 4" x 1".
- 5 double enlarged quarter cubes.
- 6 enlarged pillars.
- 5 enlarged half pillars or 10 small oblong blocks.
- 2 small oblong blocks for step.
- 4 small plinths.



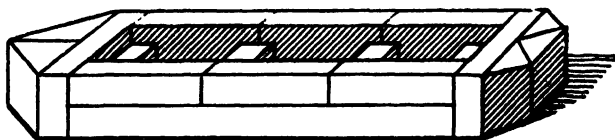
Front Porch.



Rear Porch.

*Materials:*

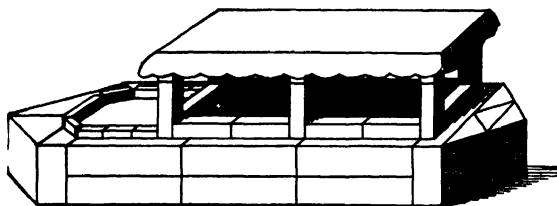
- 2 enlarged oblong blocks.
- 5 small oblong blocks.
- 1 small plinth.



Row-boat.

*Materials*

- 1 board 12" x 4" x 1".
- 2 enlarged oblong blocks.
- 6 enlarged pillars.
- 2 enlarged half cubes
- 3 enlarged quarter cubes.
- 4 small oblong blocks.

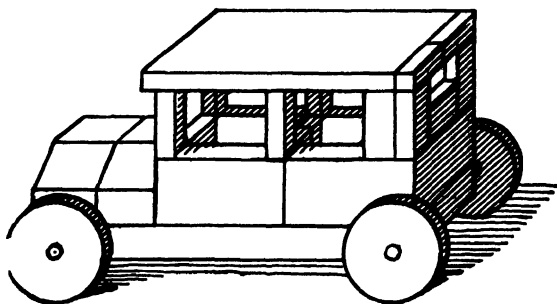


Launch.

*Materials*

- 9 double enlarged oblong blocks.
- 2 double enlarged half cubes
- 4 double enlarged quarter cubes.
- 6 double enlarged pillars.
- 16 enlarged pillars.
- 6 enlarged half pillars.
- 9 small pillars.
- Cloth or paper for canopy.

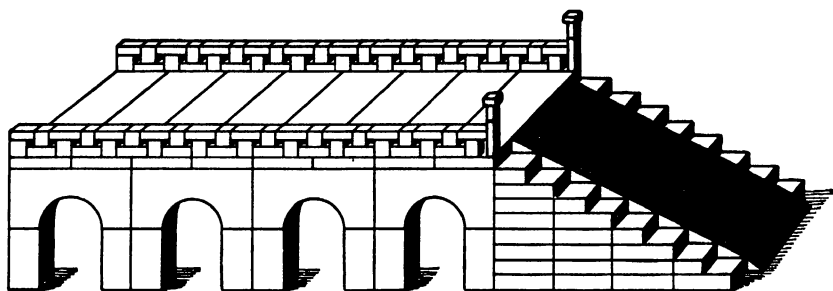
(The launch is based upon the row-boat. Six double enlarged oblong blocks instead of board 12" x 4" x 1" are used for the bottom of the launch. Double enlarged are also substituted for the enlarged oblong blocks used in the row-boat. X is a double enlarged oblong block to give height to the forward part of the boat. Remove canopy and blocks supporting it. Add windows to make cabin. Use two boards 24"x4"x1" for roof over both cabin and deck.)



Limousine.

*Materials*

- 1 board 12" x 4" x 1".
- 1 board 8" x 4" x 1/2" (not in list).
- 6 enlarged oblong blocks.
- 2 enlarged plinths.
- 4 small pillars.
- 11 small oblong blocks (6 for seats).
- 4 discs (8" in diameter).
- 2 dowel rods (6" long).
- 6 enlarged quarter cubes.
- Add lights, fenders and bumpers.



Bridge.

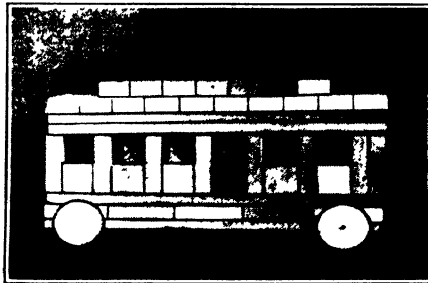
(Showing typical use of double enlarged arches, half pillars, and triangular blocks; boards 12" x 4" x 1"; enlarged oblong blocks and plinths; small pillars, plinths and triangular blocks).

## CHAPTER XV

### CHILDREN'S CREATIVE BUILDING—SHOWING THE USE OF VARIOUS TYPES OF BLOCKS



1. A Moving Picture Theatre.  
Note the Balcony, Orchestra Seats and Screen.



2. Street-car



3. A Street—(Boards of special sizes provided by the teacher)



4. Truck, Bus and Ford Car  
(Ribbon bolts used for wheels.)





5. A Living Room.

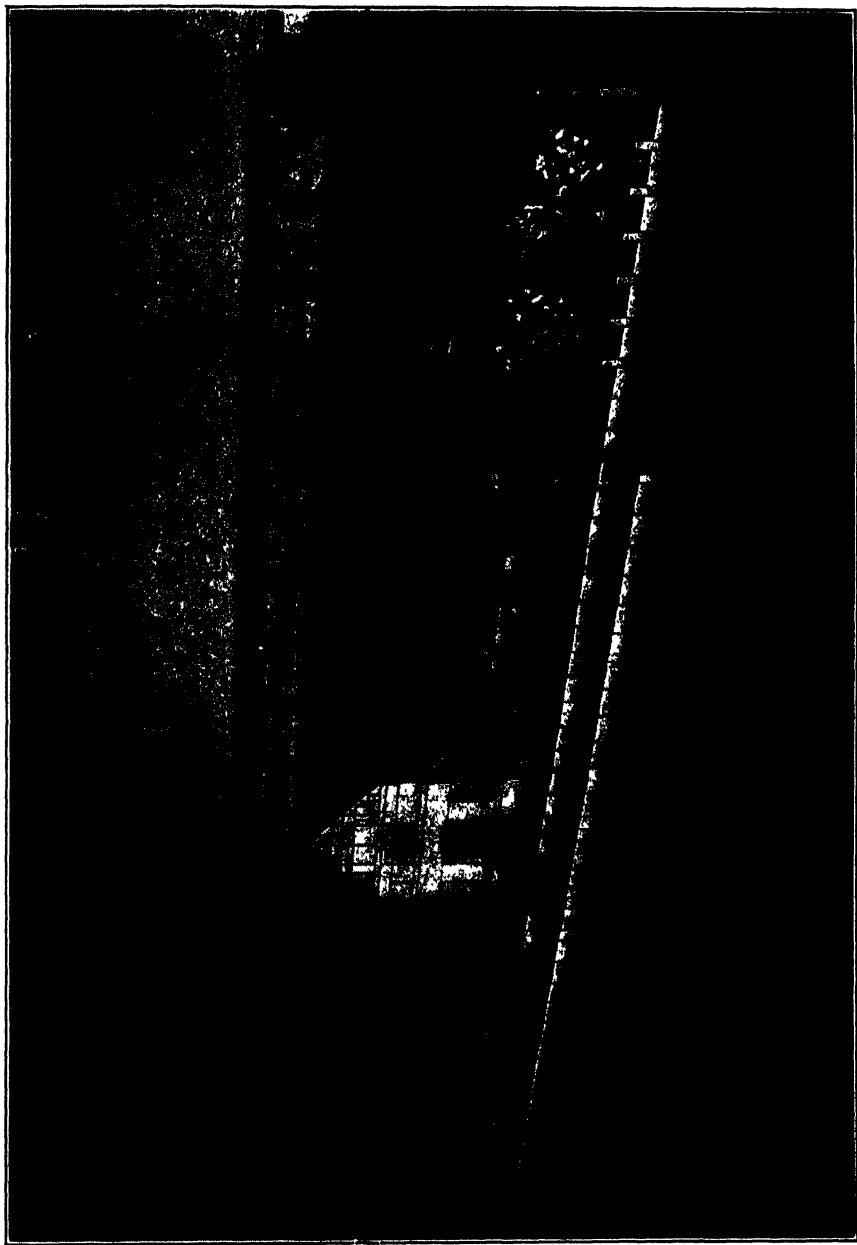
The teacher reports this living room project as one of the most worthwhile projects ever carried on in her kindergarten. It extended over a period of approximately three weeks and was finally converted into a toy shop.

It began in this way: Four boys had built a large table in the center of the room, which had to be taken down later in the morning in order to make room for other activities. The next day they started to rebuild it. The teacher reminded them of the previous day's experience and suggested that they find a place where it could remain for a longer time. They decided to build it in a corner of the room. When completed, other furniture was suggested—four chairs for the table, a cupboard for dishes, a piano and piano bench which were used over and over again in connection with their tone work. They also built a wall around it with two doorways high enough for the tallest child to enter without stooping. Other children made and decorated long paper runners for the table, piano and cupboard; rugs for the floor; clay dishes for the cupboard; lamps for the table and cupboard and finally a floor lamp for the piano.

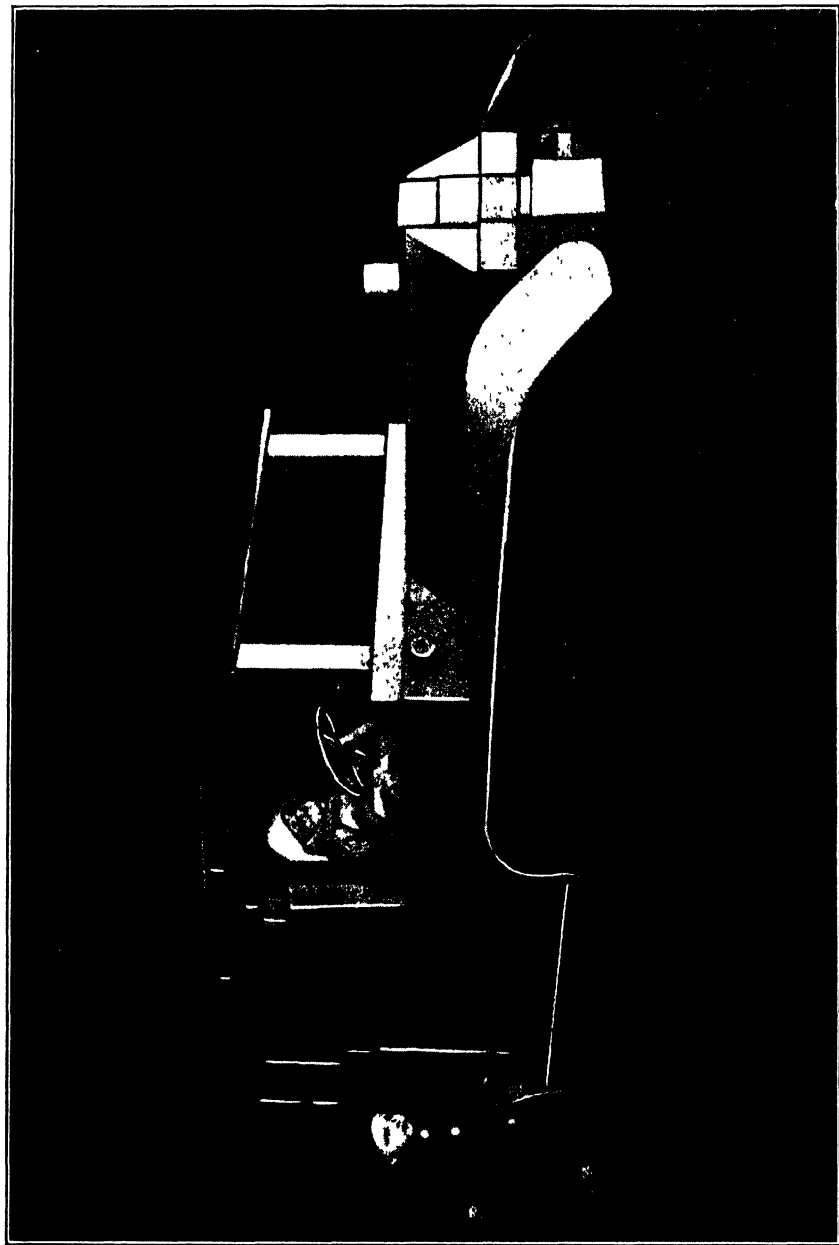
Each day the teacher gathered the entire group about the work to discuss it, to note the progress made and to offer suggestions for further work on the following day.

Many significant problems were involved, such as building the different pieces of furniture of proportionate size; making each strong enough to serve its purpose; seeing that the legs of the table were of equal thickness and height; finding a way to support the table top; building the floor lamp high enough so the light would fall on the piano keys; making the piano keys of equal width (strips of black paper were cut and pasted on a long strip of white paper for these); measuring for the table and piano scarfs; cutting them to fit; seeing to it that the decorations were balanced; selecting suitable size, color and decorations for the rugs; planning lamp shades that would fit the lamps, et cetera.

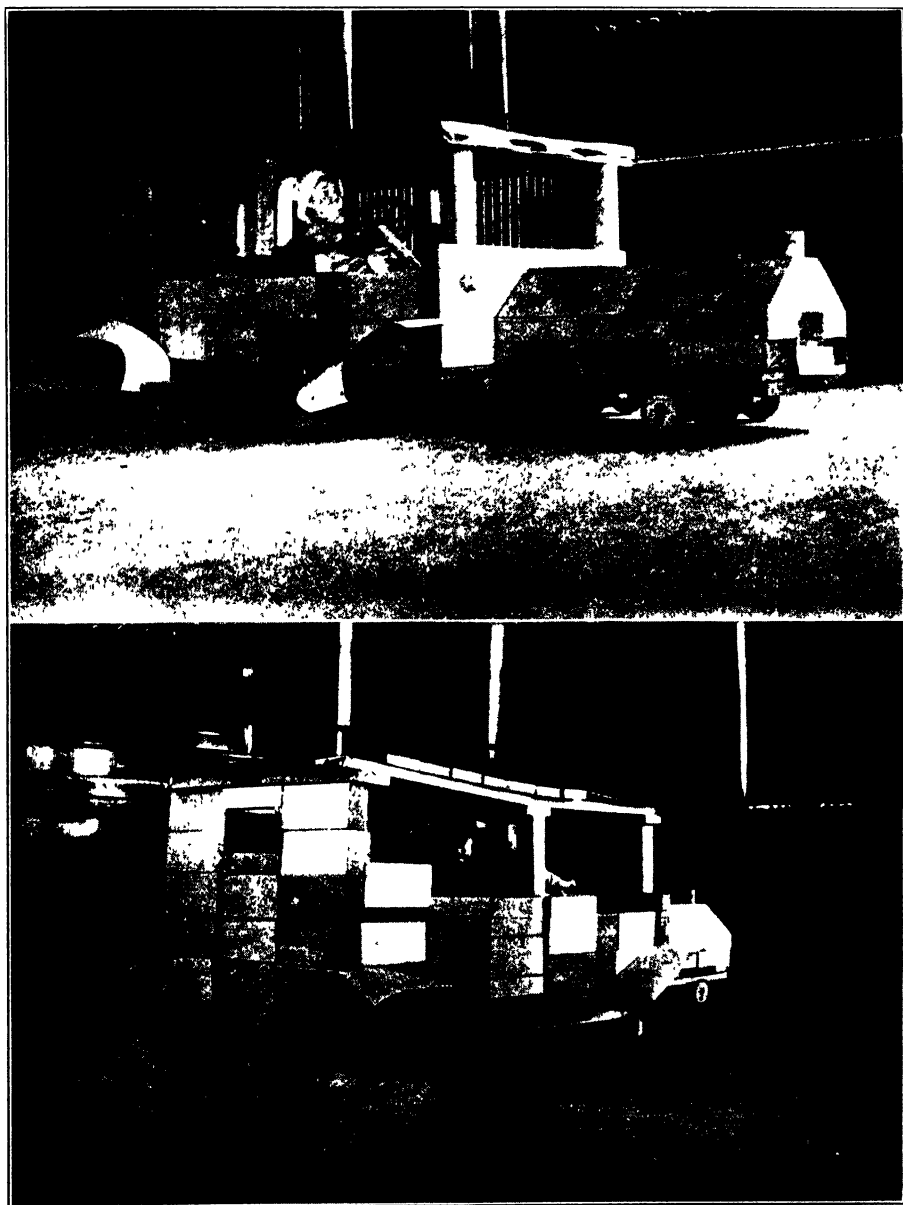
Many problems involving number arose in connection with the building of the forms—such as the number of shelves for the cupboard, the number of dishes, etc. It afforded a motive for much interesting and spontaneous conversation.



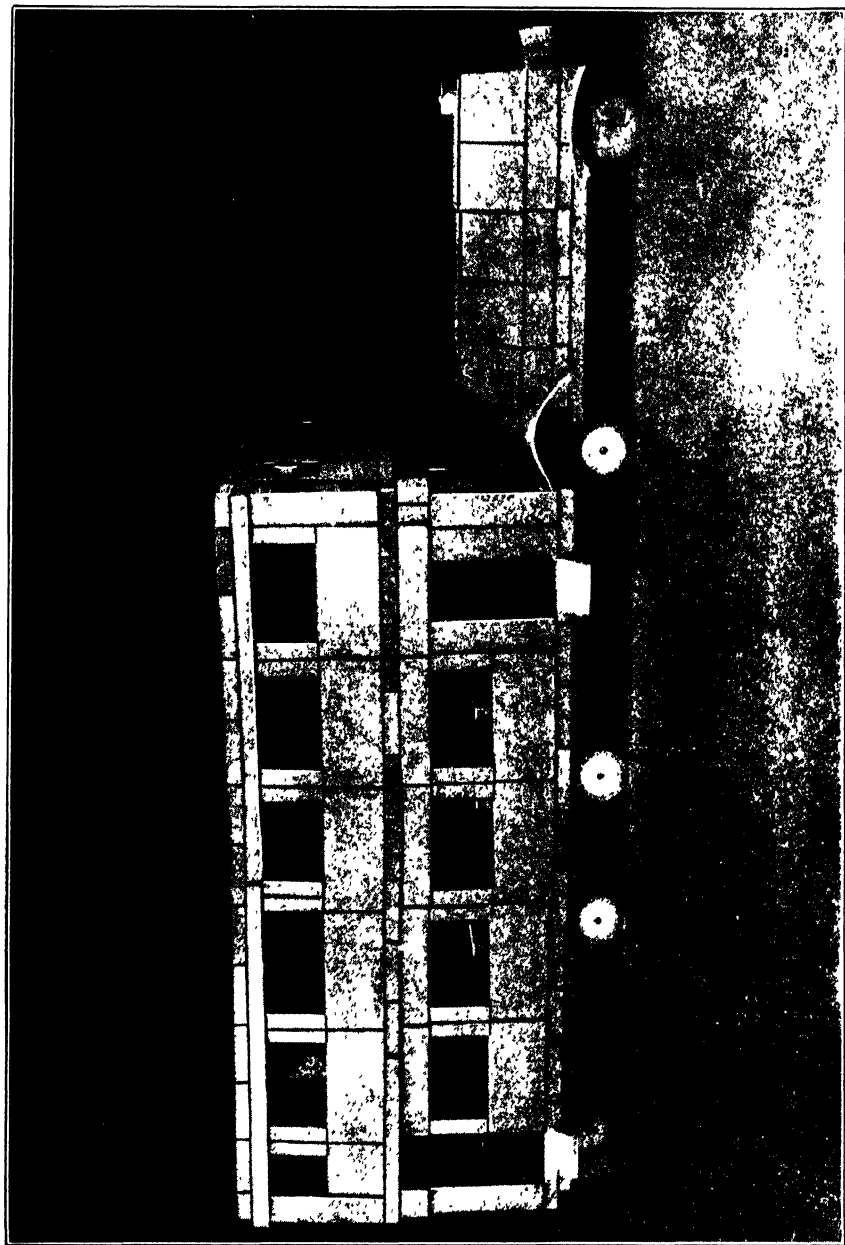
6. Barn. (Double enlarged, enlarged and small blocks used).



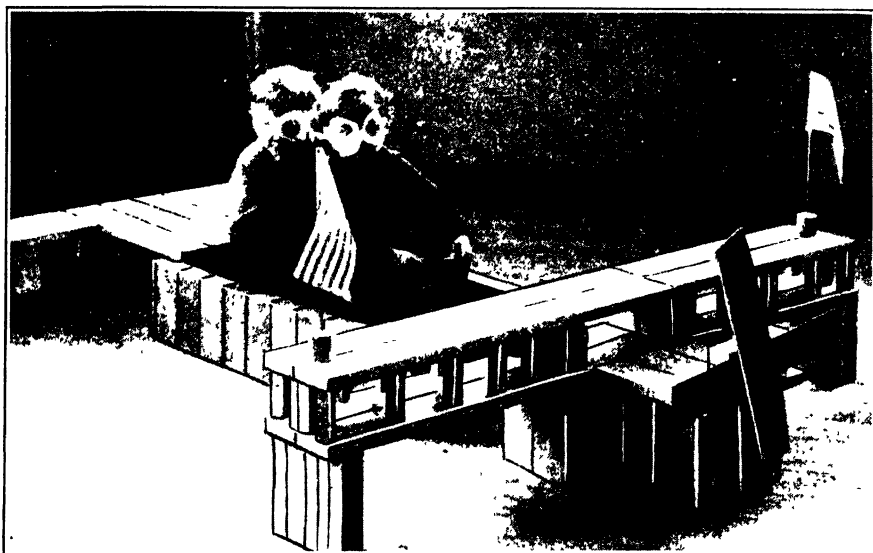
7 Dishes for wheels were not a part of the block equipment when this automobile was built. Children cut oil-cloth for the top—tag-board for fenders.



Front and Rear Views of Automobile Before Fenders Were Improved.



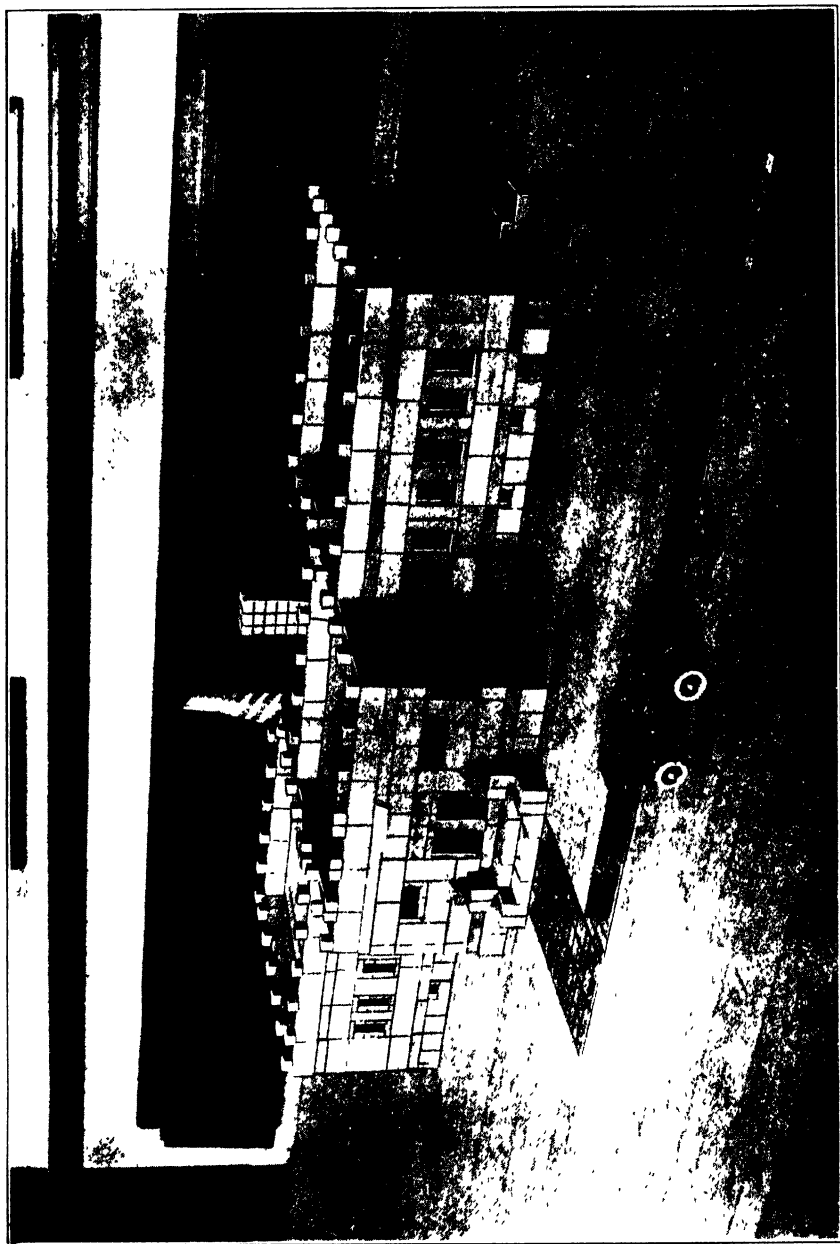
8. A Double Deck Bus Large spools were used for wheels instead of discs which have only recently been added to the block equipment



9. Ready for a "Non-Stop Flight."



10 House constructed by a small group—directed by one child.

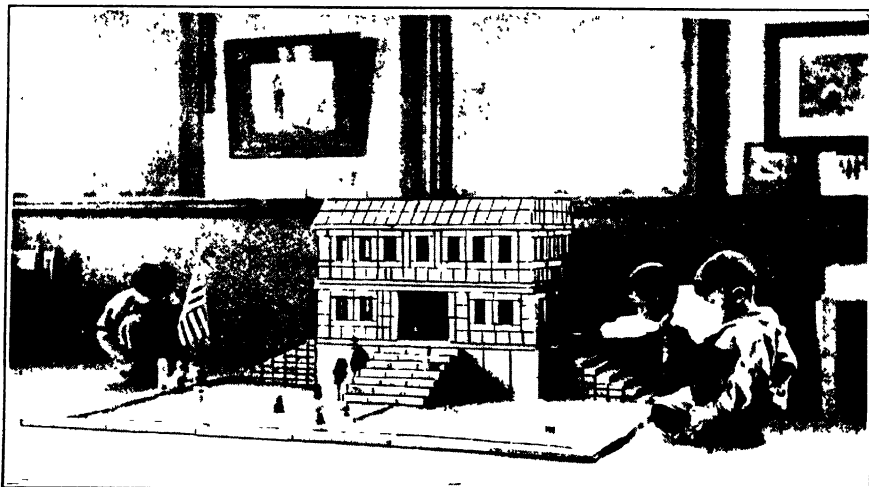


11 A reproduction of Columbia school The curved blocks are the quarters of the  
Divided Cylinder Arches had not been added to the equipment

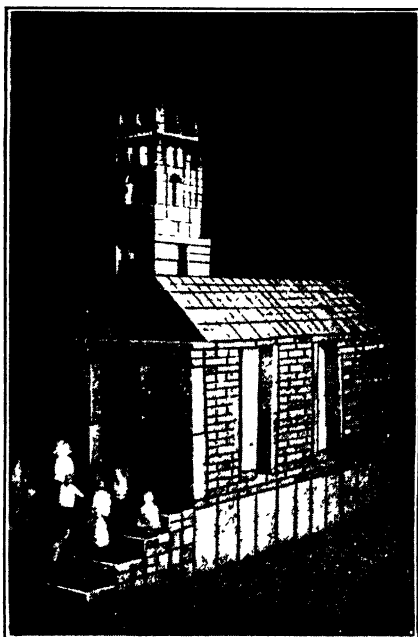


12 House and Garage.  
Enlarged blocks and boards were used. Double enlarged blocks were not available.  
Lattice around porch suggested by the teacher. The sliding doors in the garage were made of paper.



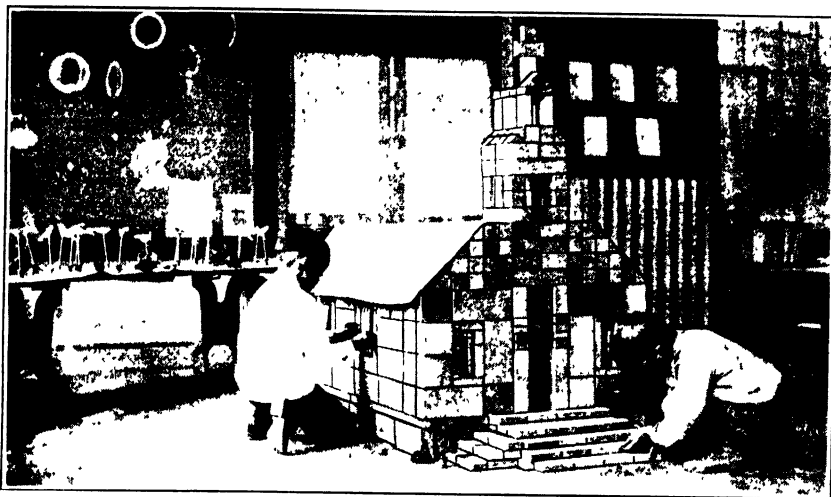


13 School Building.



14 A Church

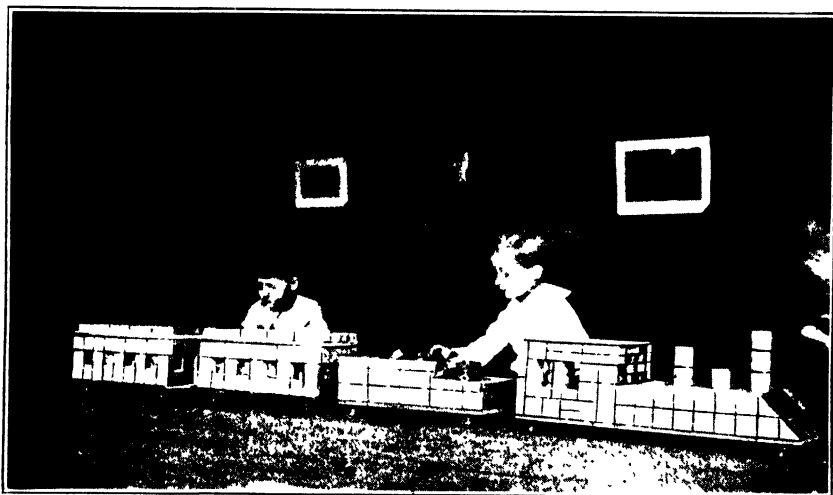
This was the work of many children. The pews, altar and pipe organ were very realistic. Paper, painted to represent stained glass, covered the windows. A bell hung in the belfry. An electric light was suspended from the roof. As a climax to the building project, the children dramatized going to church. Throughout the play a most reverent attitude was shown. Only a few of the double enlarged blocks had been added to the equipment at the time this church was built. The double enlarged triangular blocks and arches would have been particularly valuable.



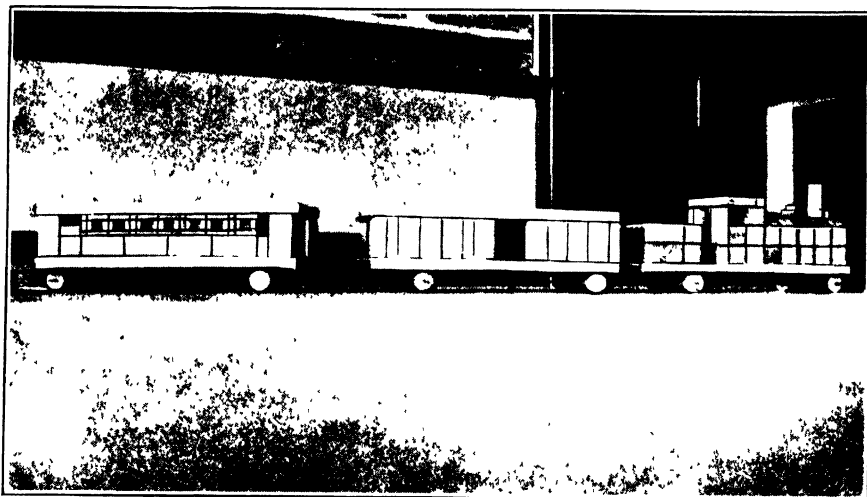
15. A Church.

Cardboard was used for the roof. Design cutting was appropriately applied in the making of the windows.

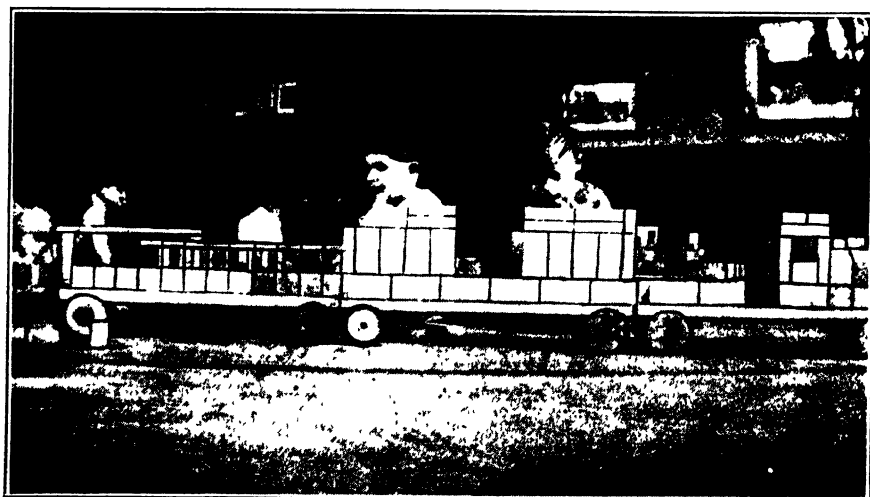
## THE EVOLUTION OF THE TRAIN



1. Casters Used for Wheels.



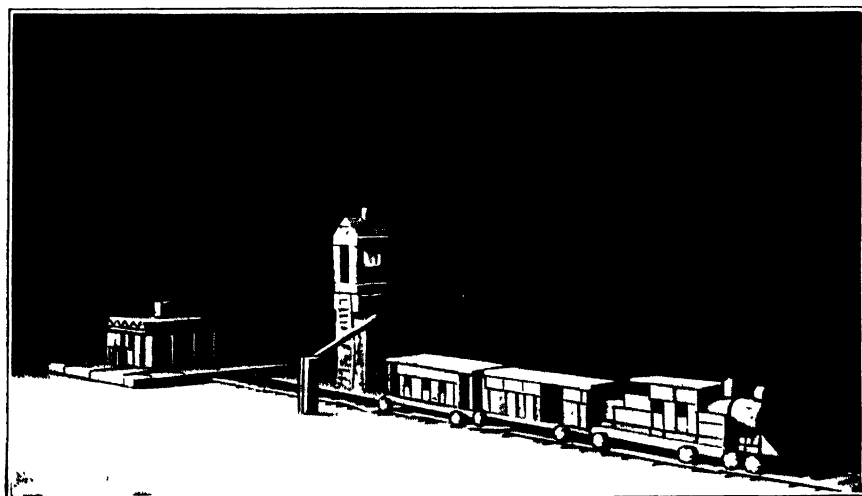
2. Cylinders Used for Wheels.



3. Large Spools Used for Wheels



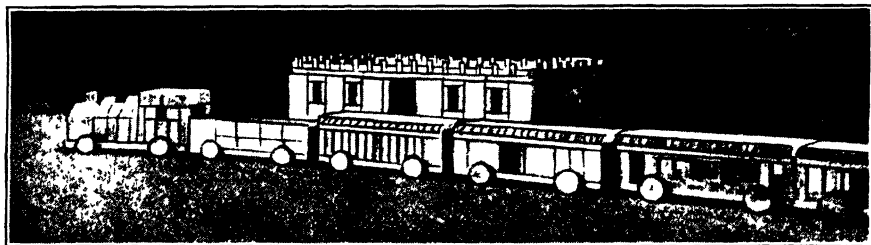
4. Wheels Cut from Cardboard—Cereal Box Used for Boiler—  
Note free cutting of ladder for brakeman



5. Button Molds for Wheels—Signal Tower—Tracks and Gates.



6. Perforated Wooden Discs Used for Wheels—(Train will move)



7. Train and Station.

### The Train

With a box of my blocks and two or three boards  
 I built a most wonderful train;  
 I ran it about on the living-room rug  
 And back to the round-house again.

The chairs were the villages miles apart,  
 The hall was the ocean of blue;  
 I stopped at each station to let people off  
 While the whistle was blowing toot-too!

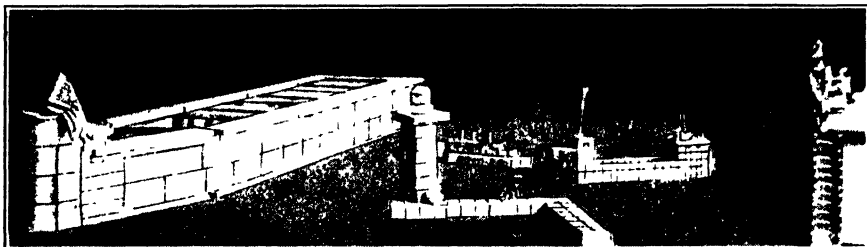
D. P.

BRIDGES—BOATS AND PIERS

Did you ever build a ship  
Then set sail from your pier  
With sailor dollies on your decks  
And you in front to steer?

And did you play you were safe  
For you had built with blocks  
A lighthouse with a searchlight  
To keep you from the rocks?

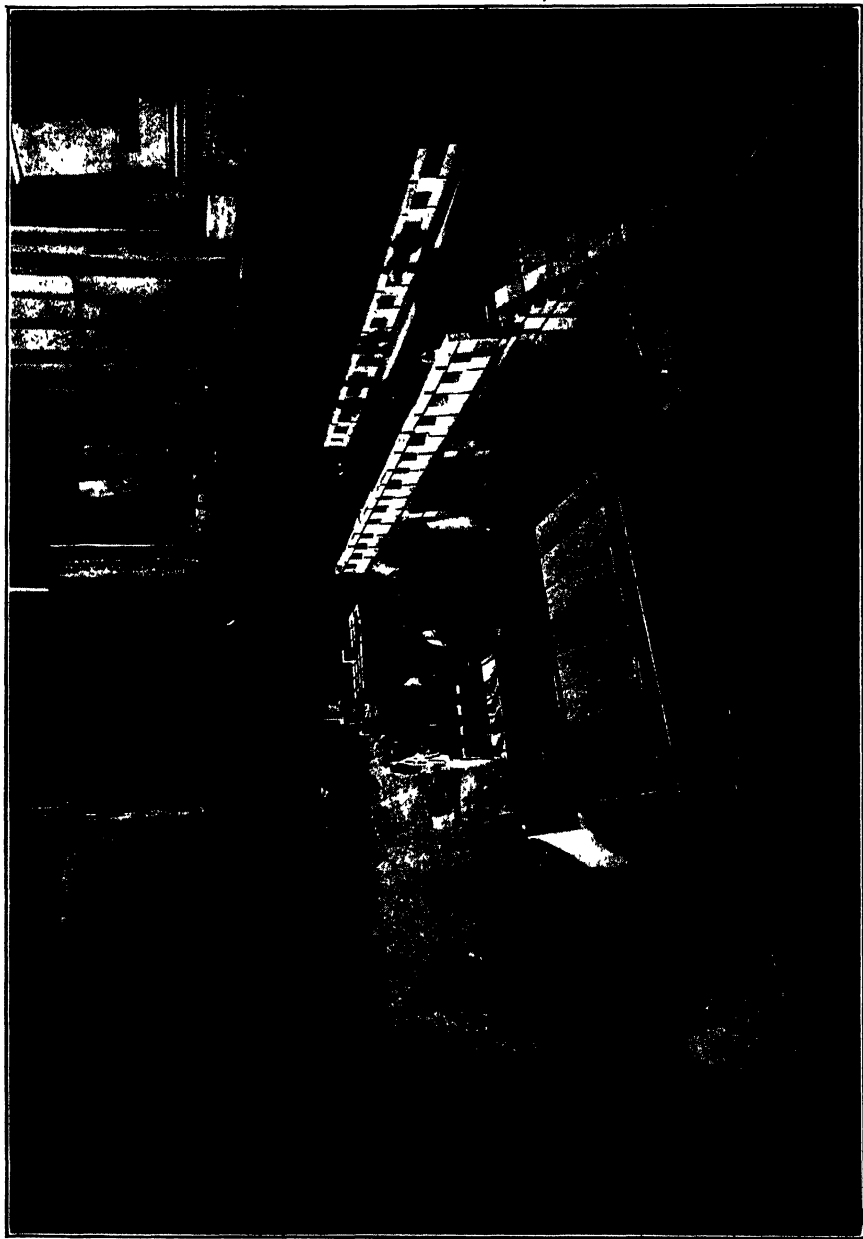
D. P.



1



2



3. The Work of Several Children. (See outline of its development).

The project shown in the preceding photograph is typical of the kind of work children five and six years old will do if they be given opportunity.

The representation of the bridge, docks, light-house and boats was not worked out in detail in the mind of the teacher. It grew out of a discussion of transportation which in turn grew out of a recognized need for going from one city to another. Previous to this the children had spontaneously built bridges and tunnels of the simplest construction, and the idea of bridge was chosen by the teacher because it had many possibilities. The idea was developed through conversation, picture, suggestion and criticism of the work done. At first the children built all kinds of bridges, high, low, long, and broad, but when several working in a group, evolved one approaching fair proportions, that bridge was left on the floor, and either of their own initiative or through suggestion from the teacher, inclines, steps, railings, sidewalks and stronger piers were added.

The building of the bridge led to the discussion of the use of bridges and it developed that some were for the purpose of crossing water and that boats went under them and were another means of transportation. Boats had to come to shore, so docks were built. Boats had to be guided into the harbor, hence light-houses. People must buy tickets to ride on the boats, therefore ticket office and waiting station. Boats were of various kinds—passenger boats, freighters, row boats, sail boats and motor boats.

Wagons were constructed to cross the bridge and dolls dressed to represent people on the bridge or passengers on the boats. Interest even in safety was not forgotten for the children decided that a small wagon with a little doll in it, could not be on the roadway, but must be placed on the sidewalk, and that a railing



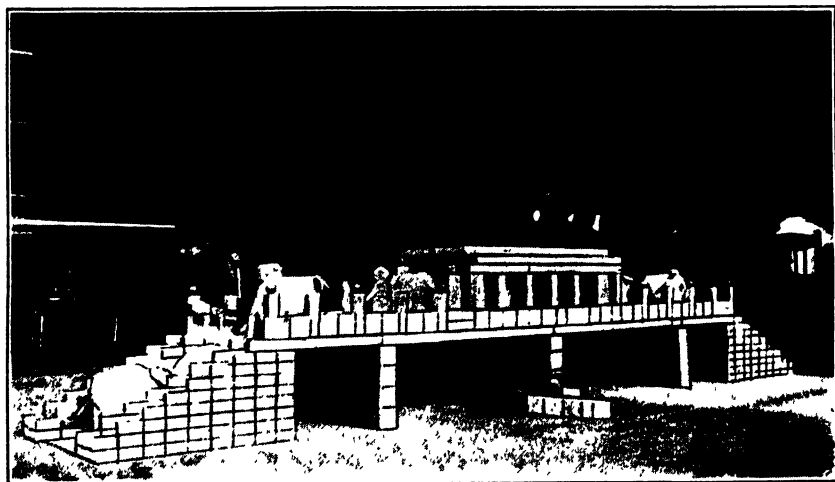
must be built on the dock to keep people from falling into the water.

Would you not say that the working out of such a project was educational? Think of the language involved, the study of pictures, the comparison of experiences, the stories that might be told, the problems involved in connection with the placing and strengthening of the pier, how to build boats and light-houses, the use of measure, applied number, balance, the adaptation of form to use, and perhaps as an artistic climax, teaching Stevenson's "Where Go the Boats?"

Dark brown is the river,  
Golden is the sand  
It flows along forever  
With trees on either hand.

On goes the river,  
And out past the mill,  
Away down the valley,  
Away down the hill.

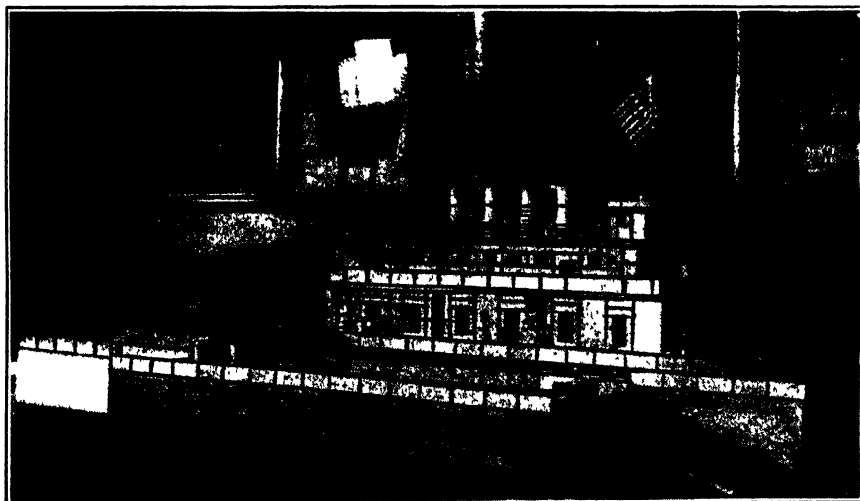
Away down the river,  
A hundred miles or more,  
Other little children  
Shall bring my boats ashore.



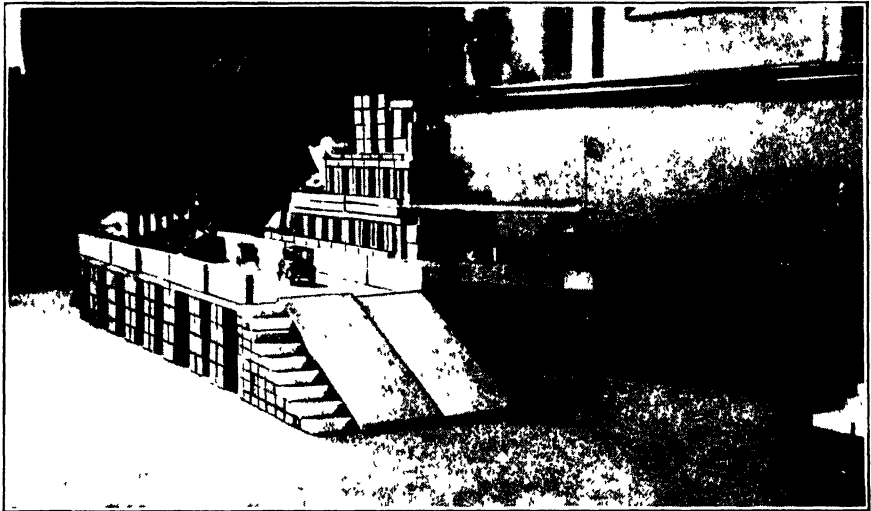
4. Even the Elephants Must Cross the Bridge.



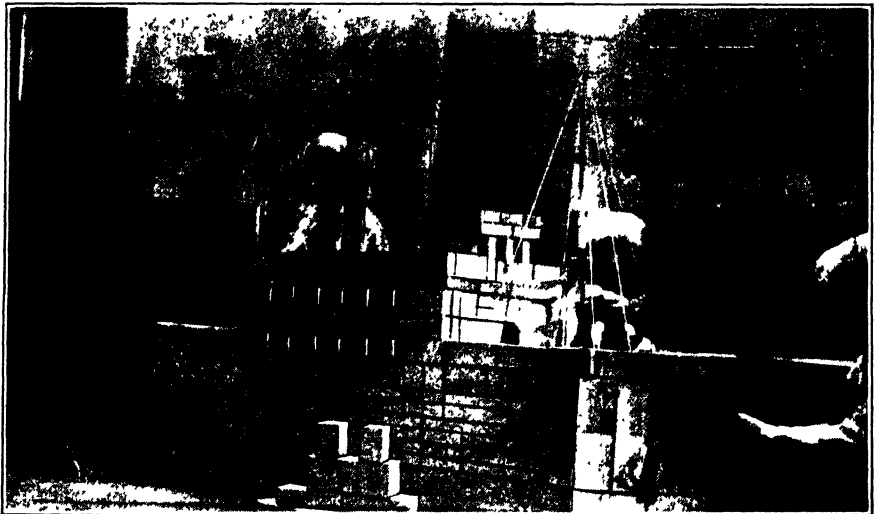
5. An Ocean Liner in Process of Construction.



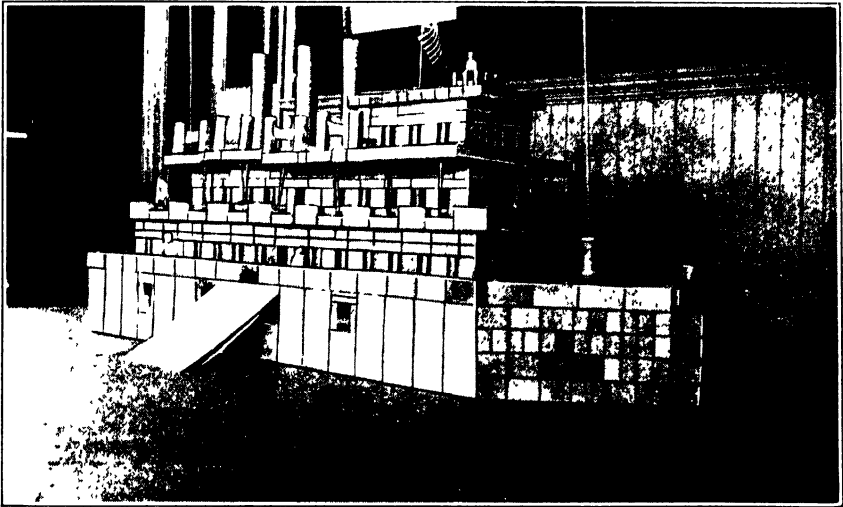
6. The Pier Has Been Added.



7. A Lake Steamer Ready to Leave the Pier.



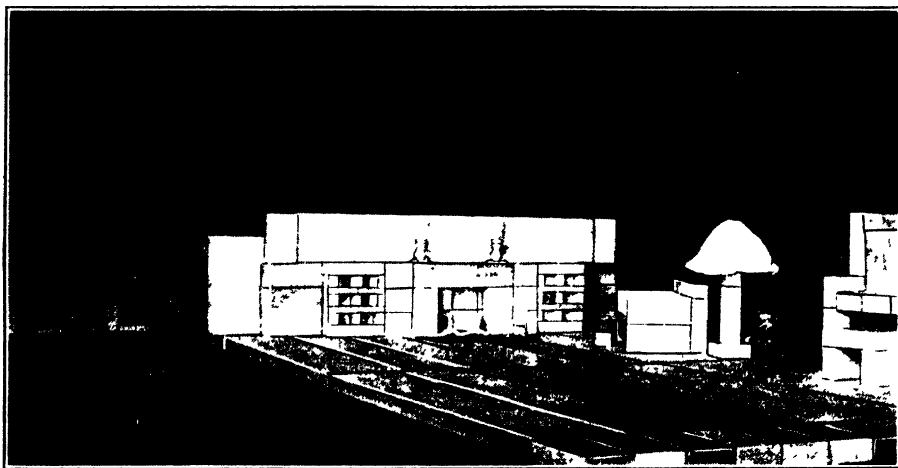
8. Another Ocean Liner.



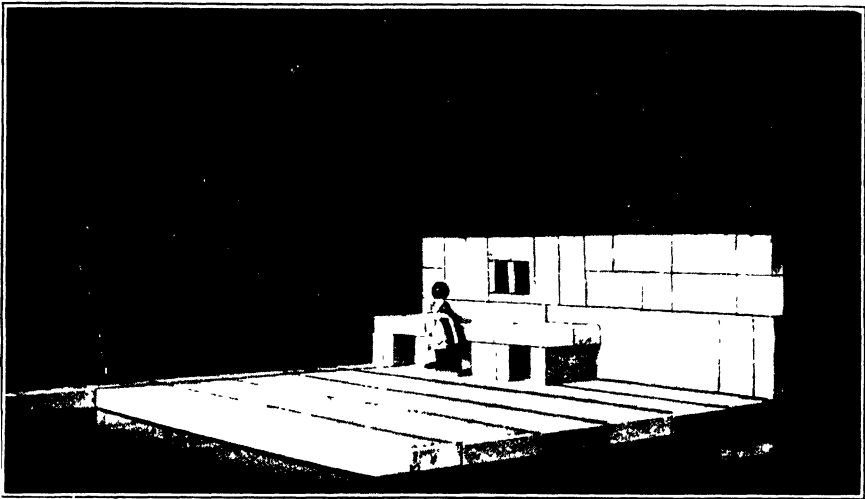
- 1) Arches for portholes had not been added to the equipment when this boat was constructed. It utilizes many of the units and typical combinations previously emphasized.

## CHAPTER XVI

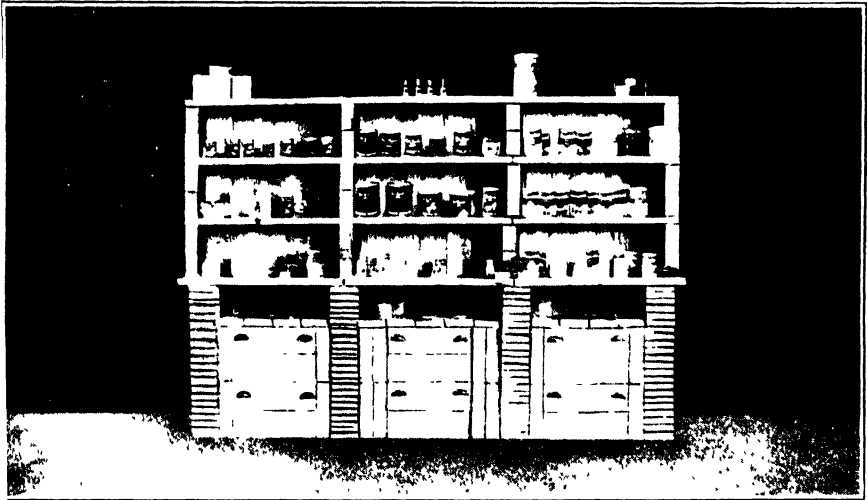
### CREATIVE WORK OF STUDENTS AND TEACHERS



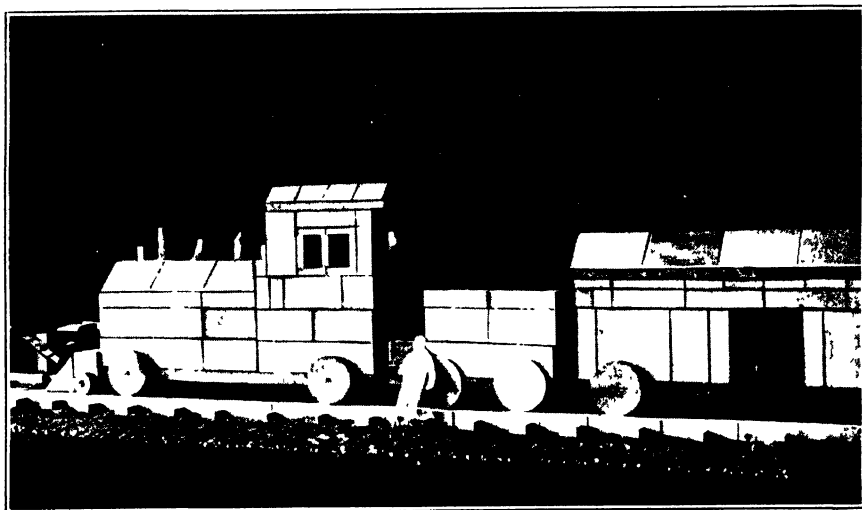
1. Living Room.



2. Kitchen.



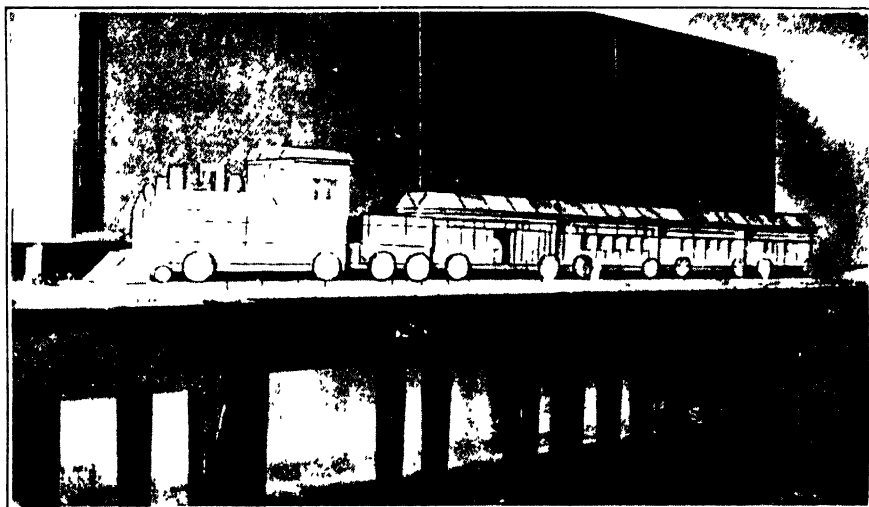
3. Shelves and Bins in Grocery Store  
(Brown paper used for handles on bins)



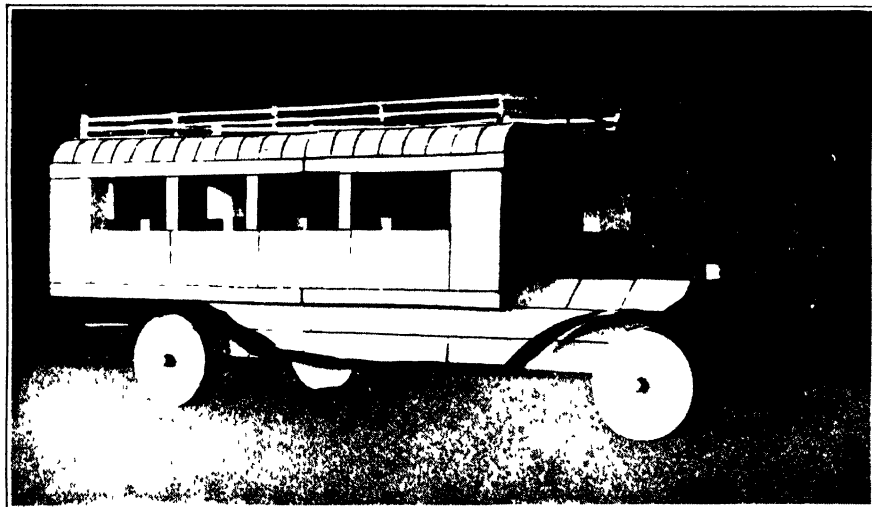
4. Engine—Coal Car—Baggage Car.



5. Coach and Pullman Cars.

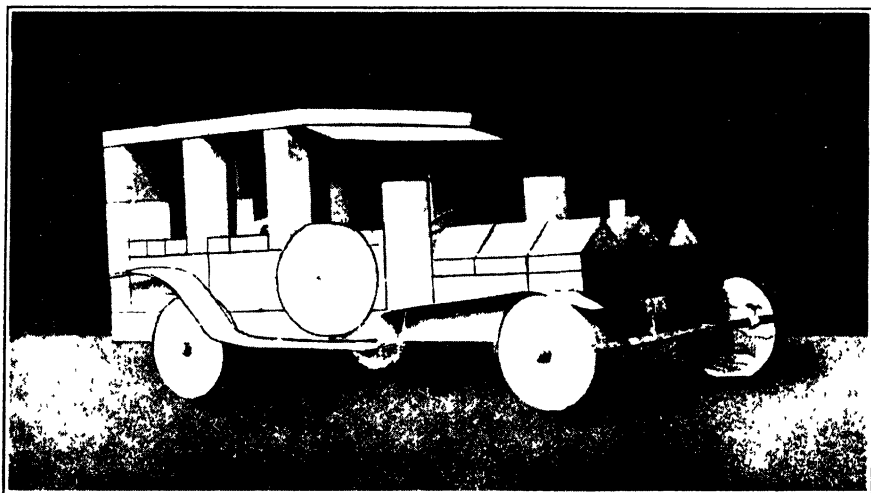


6. Complete Train.

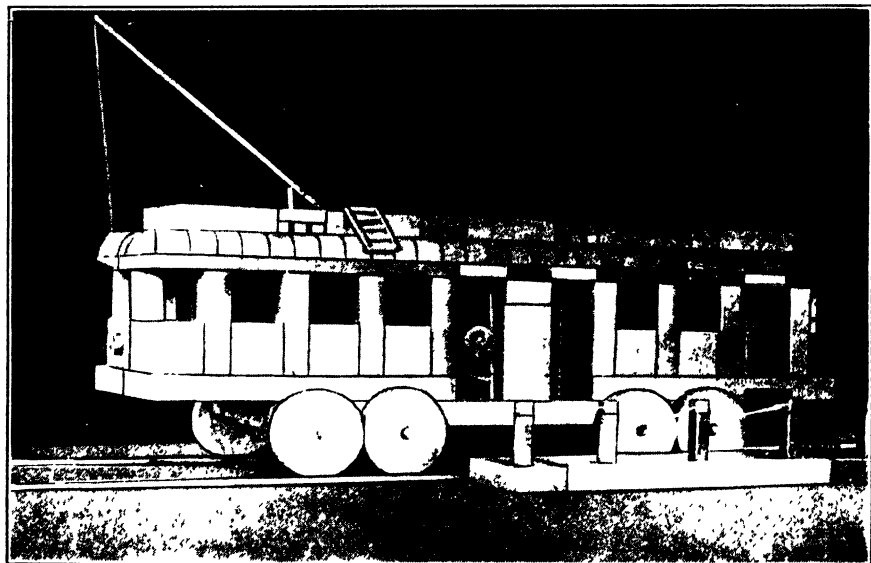


7. Suburban Bus.

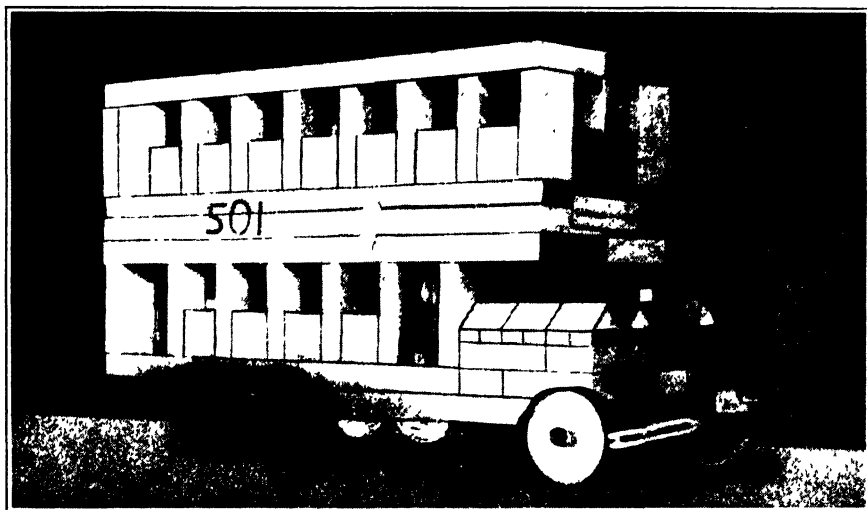




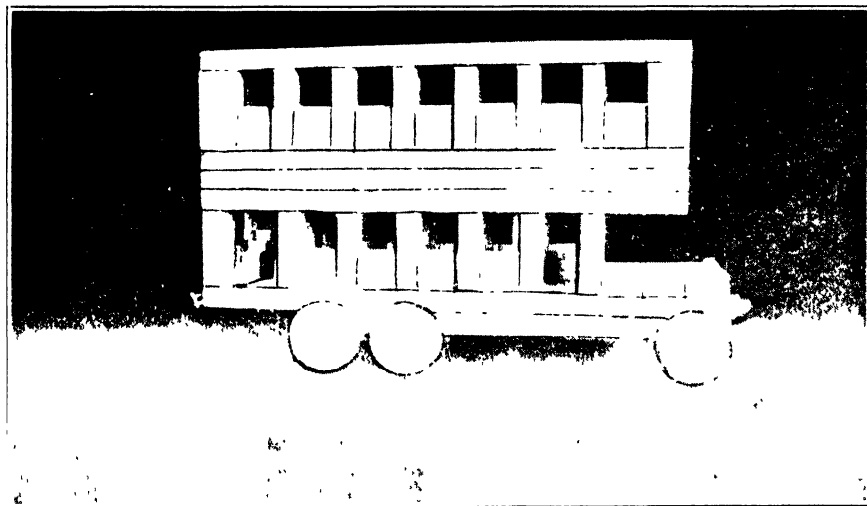
8. Limousine.



9. Street Car.



10 Double Deck Bus



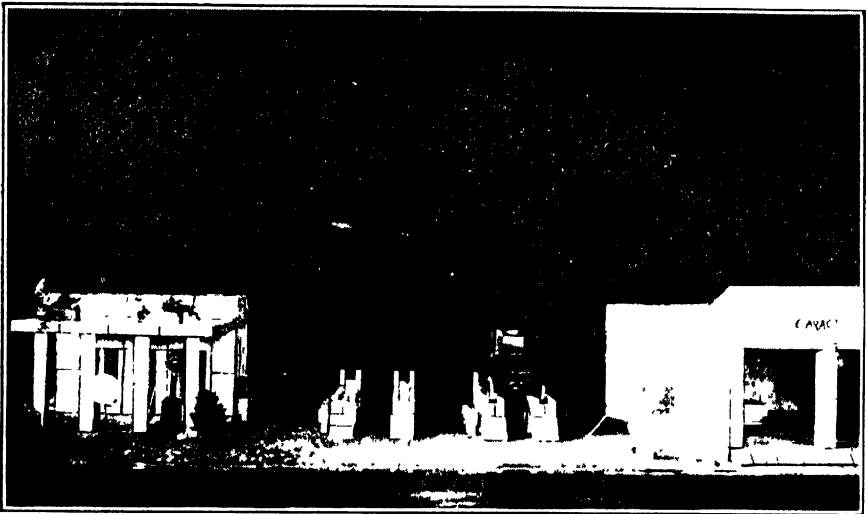
11. Bus—Showing stairs to upper deck



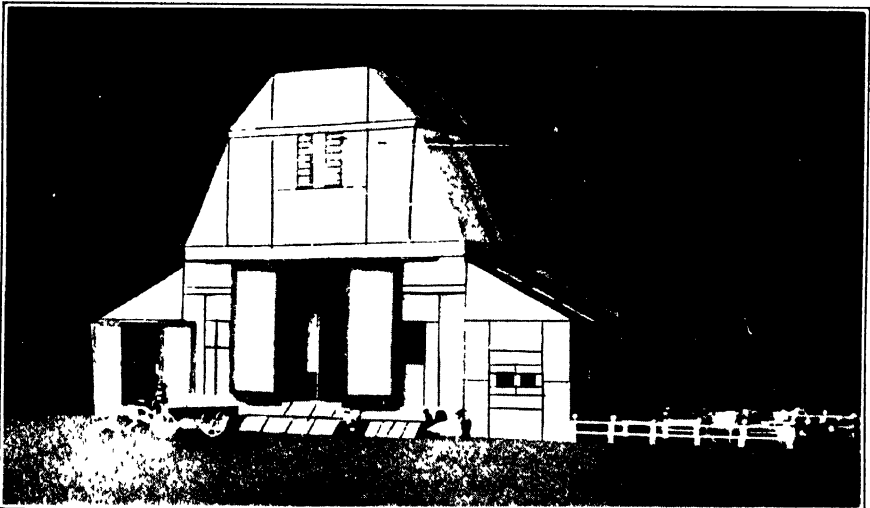
12 Filling Station



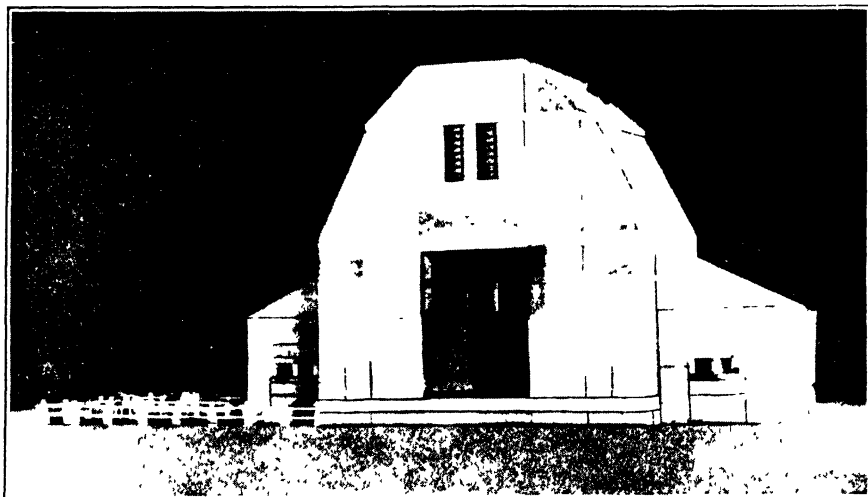
13. Garage and Oil Rack.



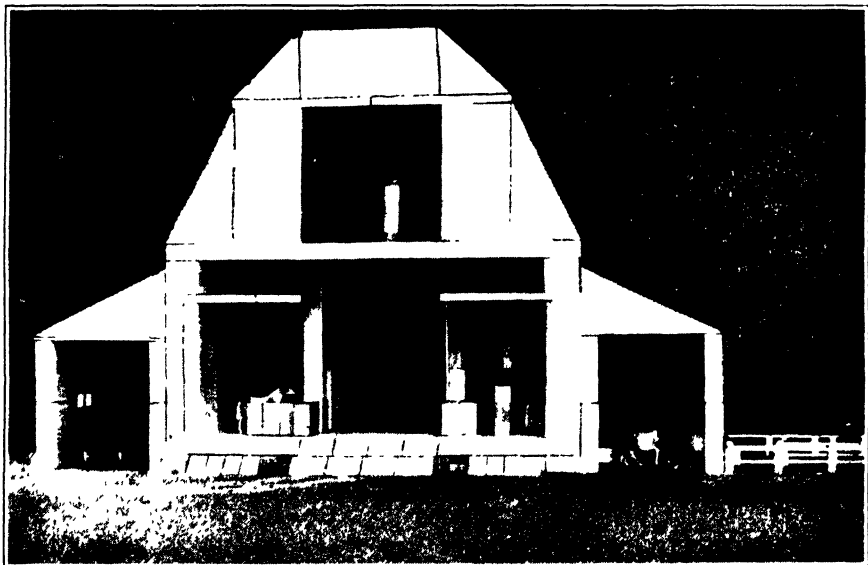
14. Garage, Filling Station and Oil Rack.



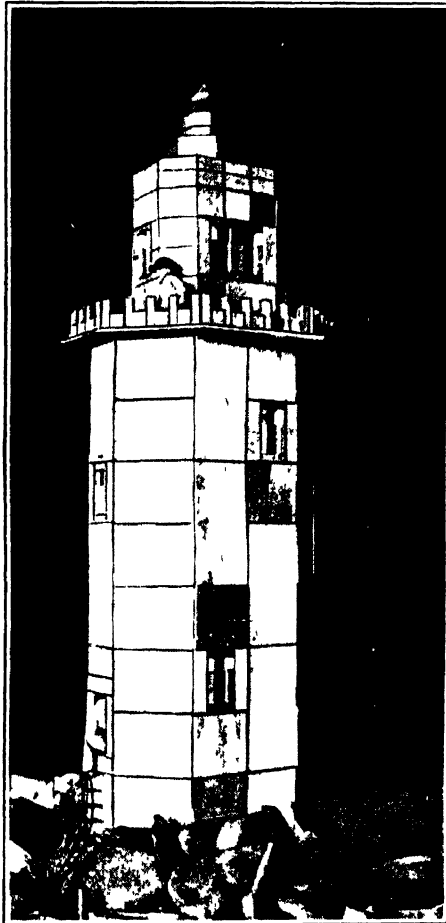
15. Barn—Front view.



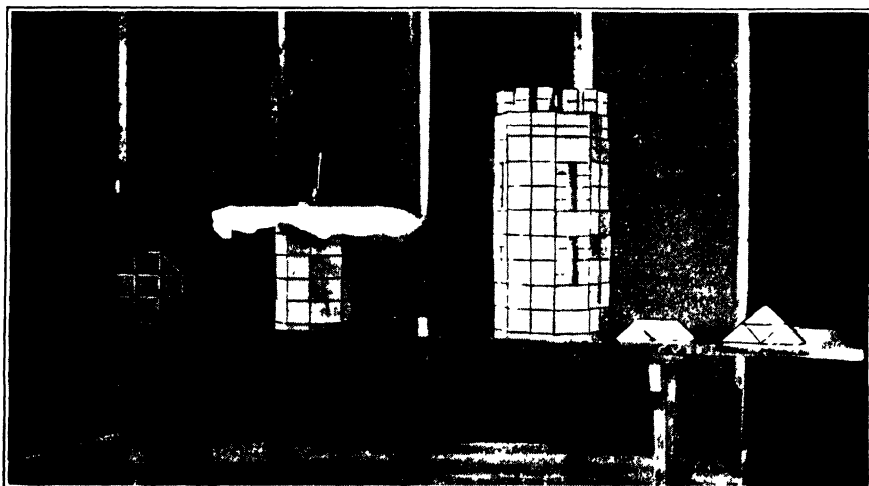
16 Barn—Rear view.



17. Barn—Interior view.



18. Lighthouse

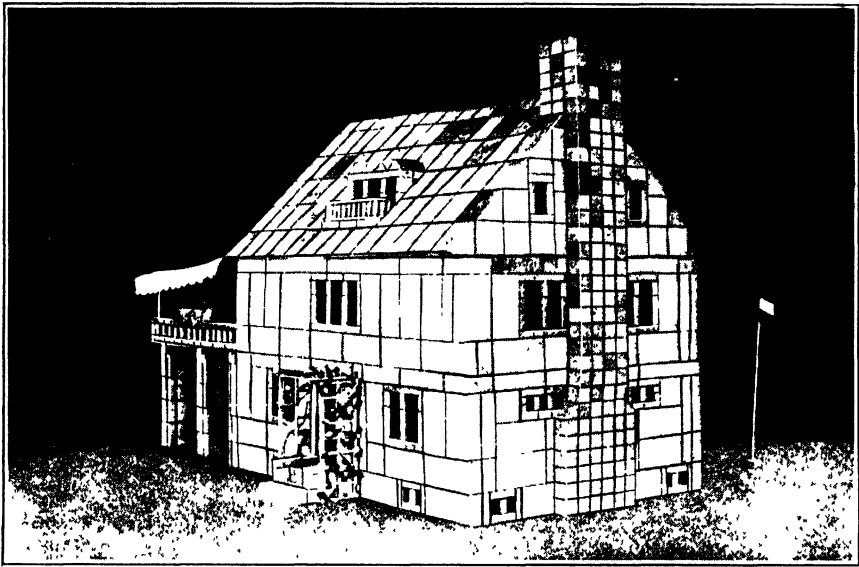


19. Showing Principle of Towers

## HOUSES



1a. Front.



1b. Rear.

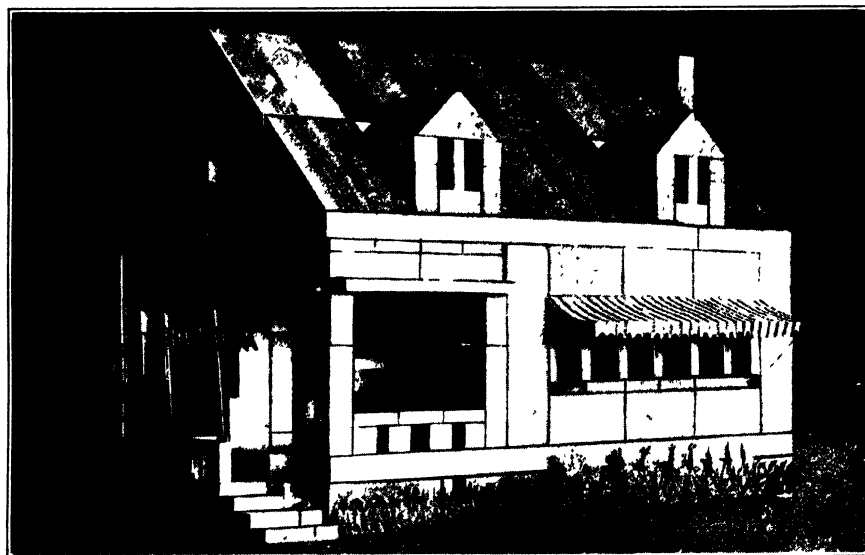


1c. Interior.

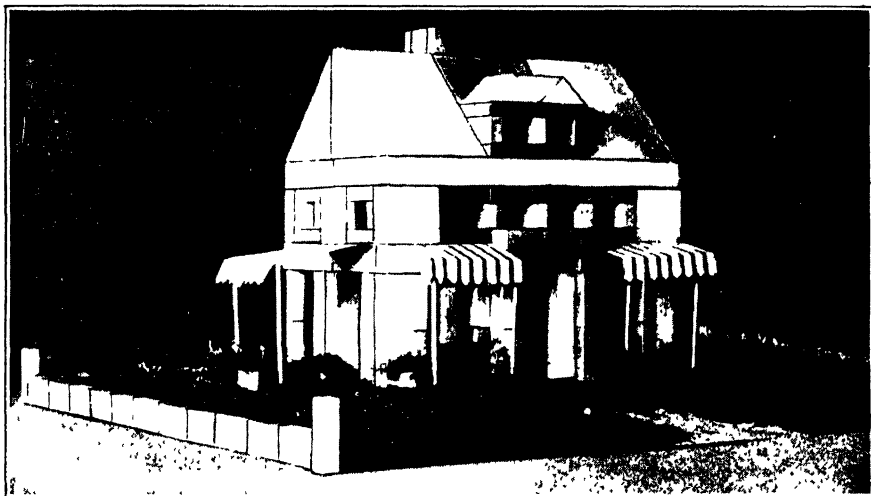




2. House with Two Entrances



3. House with Sun Parlor.



4. House with Terrace.



5. A Dutch Colonial.



6. A House with Charn.



7. House with Recessed Porch.



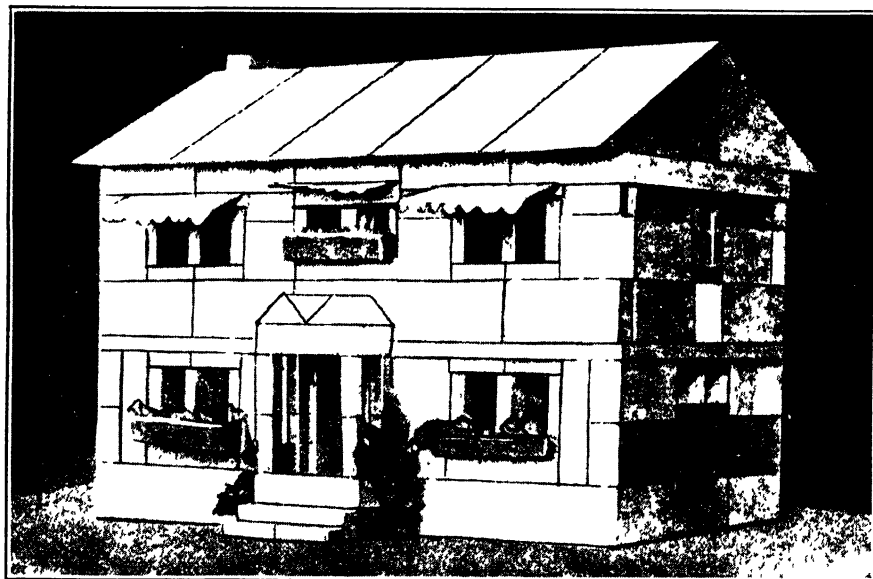
8. Two-Family House—Front view.



9. Two-Family House—Rear view.



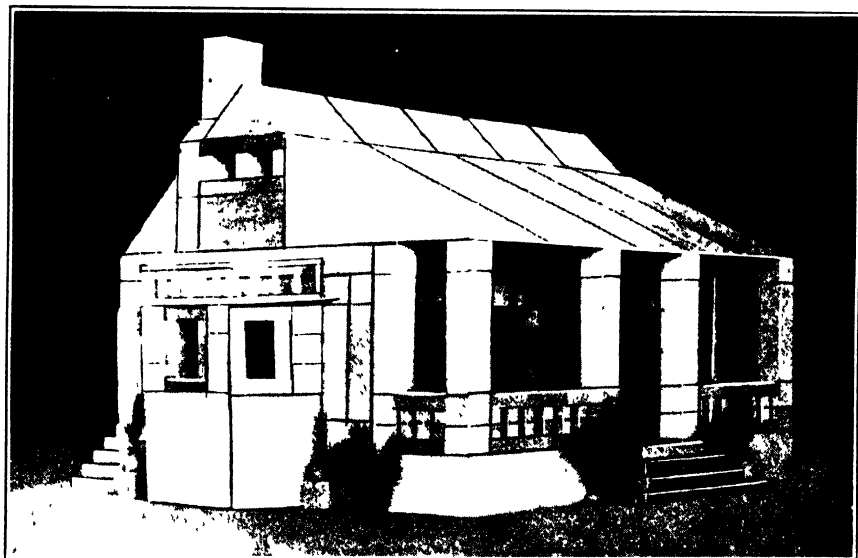
10. California Bungalow.



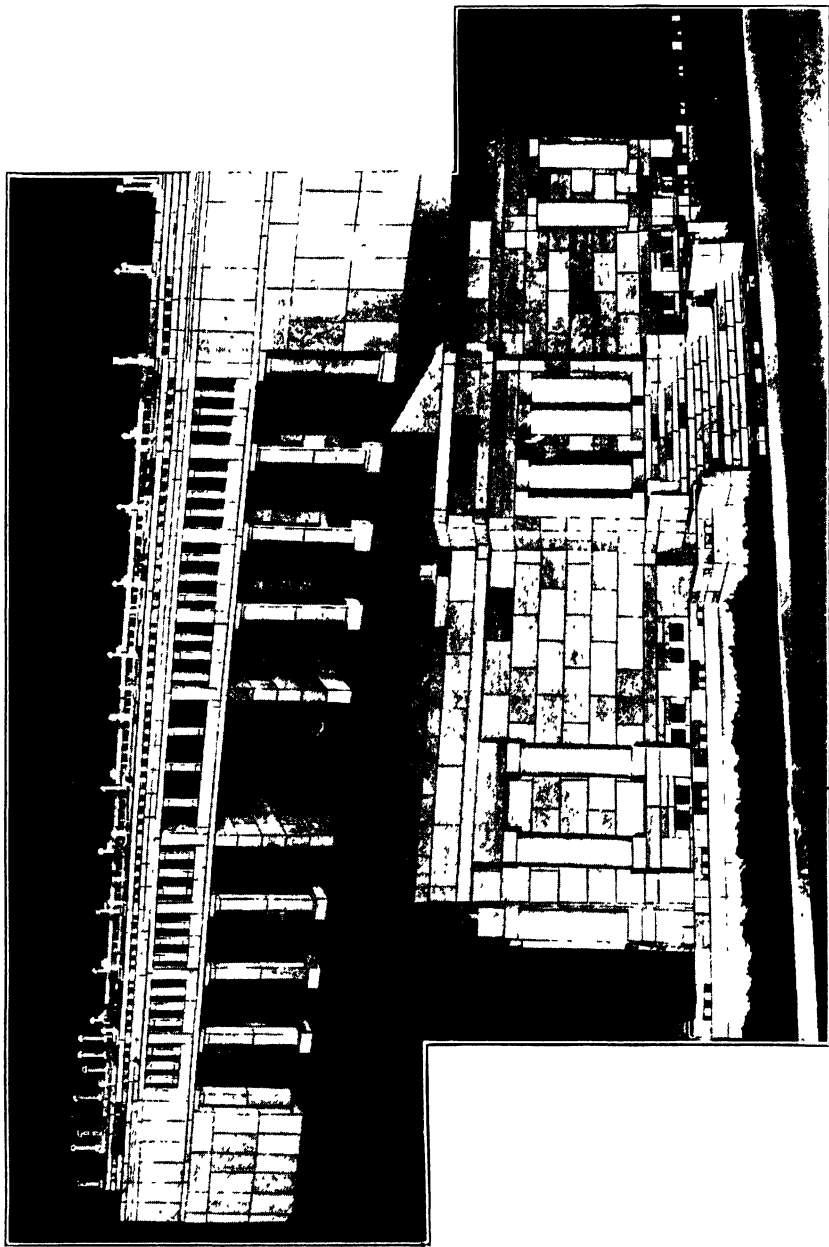
11. House with Formal Entrance.



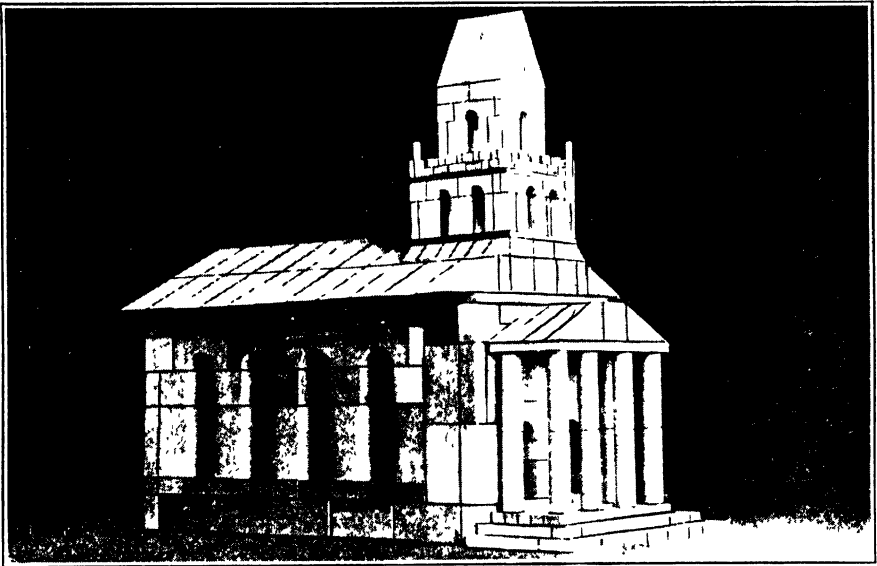
12. A Cottage.



13. House with Bow-window.



14. A High-level Bridge.  
Triangular blocks (half of square prism  $8'' \times 4'' \times 4''$ ) are used for the incline to the lower level



16. Church—Showing arches, cylindrical pillars and new triangular blocks.



## CHAPTER XVII

### BLOCK BUILDING AS RELATED TO OTHER CURRICULAR ACTIVITIES

It would be unfortunate indeed if the reader were to gather from the foregoing pages that certain forms, designed to teach some particular use of the blocks, are to be planned by the teacher and presented as models to be imitated by the children. Nothing could be farther removed from the thought in mind. It is true that many of the photographs have not shown the children in the act of building nor at play with the finished forms. Neither have they always shown the accessories which add a more realistic and human touch.

*The primary aim has been to show only the possibilities of the material* and therefore anything that might detract from the form itself or in any way hide certain positions or combinations of the blocks, has been eliminated. Space does not permit of a description of the origin and development, the latter sometimes extending over a period of several weeks, of all the work here illustrated. Only one or two projects, which are fairly typical of our method of procedure, have been outlined.

There has been no attempt to show in detail how this type of work correlates with other phases of the curriculum but may it be said that any block building which does not grow out of the child's experience and in turn deepen and enrich that experience through being linked up with language, science, art, hygiene, safety, mathematics and other manual activities falls far short of the ideal which this book is intended to realize.

## HOW BLOCK BUILDING MAY BE STIMULATED

Not all children are born architects any more than are all born musicians or poets, but many would achieve more than they have along this line were their interest sufficiently aroused and intelligently directed. While the emphasis today is upon the development of "initiative" and "creative power" we must be ever mindful of the fact that true creativity is the result of an harmonious working together of head, heart and hand.

When ideas are vague, skill lacking and an attitude of indifference present we can hope for little creative work. Under such conditions it would be foolish to wait for the child to take the initiative. The wise teacher will not fail to initiate plans and purposes for him but *she will do it in such a way that the child will see them as his own and enter into them with the same degree of "whole-heartedness."*

This must not be confused with the imposition of problems *foreign* to his experience.

From a variety of sources the teacher will find stimuli that should encourage children to express their ideas through form.

**A. Toys as Stimuli:**

Dolls suggest a need for chairs, beds, dressers, house, auto.

Doll dishes suggest a need for table, cupboard, refrigerator.

Horse—barn, shed, stall, fence, wagon.

Dog—kennel.

Pigeons—pigeon house.

Chickens—coop and chicken yard.

Train—station, tunnel, bridge, platform, ticket office, signal tower.

Boat—wharf, lighthouse, bridge.

Automobile—garage, filling station, oiling rack.

**B. *Environment as a Stimulus:***

Any locality, be it the country, a small village or a large city, furnishes many objects and experiences which may be utilized as a means for developing the building instinct. Frequent excursions to certain points may be necessary in order to clarify the vague impressions resulting from inaccurate observation. Every neighborhood can boast of one or more of the following:

Houses—single, double, apartments, terraces, bungalows.

Public buildings—art museum, library, bank, church, stores, school houses, post office, theatre, railroad station.

Barn—broad door, ramp, hay loft, stalls, manger, feed box, bins, watering trough, silo, fence, pigeon house, shed.

Garage—gasoline station, oil rack.

Trains—engine, passenger coach, pullman and observation car, baggage car, box car, flat car, caboose.

Street cars—with front, side and rear entrance; seats lengthwise and crosswise.

Automobiles—open, closed, trucks, suburban bus, double deck bus.

Wagons—farm, delivery, circus wagon, animal cages, lunch wagon.

Bridges—foot bridge, railroad, double deck, tunnel.

Boats—row boat, tug, freighter, passenger boat, house boat.

Towers—lighthouse, signal tower, church tower.

Playground—slide, roller-swing, swing.

Picnic grounds—tables, benches, pavilion, band-stand.

Ball grounds—ticket booth, fence, grand-stand.

Zoo—animal cages.

Living-room furniture—chairs, davenport, table, book-case, desk, piano, fireplace, victrola, radio, clock.

Bedroom furniture—bed, dresser, chest.

Kitchen furniture—kitchen cabinet, shelves, stove, sink and drain board, refrigerator.

Bathroom—tub, toilet, wash basin.

Aviation field—aeroplanes.

Miscellaneous—telegraph poles, mail box, sidewalks, fire engine house, greenhouse, shoe shining stand, car barns, market, railroad gates, moving sidewalk, weighing machine.

### C. *Trades and Industries as Stimuli:*

A little boy, whose father was a railroad engineer had been taken for a ride on his father's engine. So great was his interest that he played engine, drew pictures of engines and made engines with his blocks. The entire group became interested. Trips were made to the railroad station to see engines and trains and the play that centered about them lasted for days. Tracks were laid, signal tower built, gates erected, ladders constructed for the brakeman, baggage made for the baggage car, people made to ride in the coaches, traffic signals with policemen to manage them, and autos and street cars to take people to the station. Freight trains were made, then tunnels and bridges. The latter suggested boats and lighthouses and a new series of forms was started.

In a similar way building has been stimulated by a discussion of other workers—Boat captain, grocer, carpenter, bricklayer, motorman, garage man, shoemaker, furniture dealer, fireman, postman, baker and farmer.

### D. *Seasonal Interests and Festival Occasions as Stimuli:*

Fall—Interest at this time is centered upon the preparation for winter. Fruits and vegetables have to be gathered in

and cared for. Blocks may be used for the construction of farm buildings, bins, boxes, wagons, trains and finally at Thanksgiving time, for the building of the church.

Winter—Slides will be built and, as Christmas draws near, the blocks will be in demand for the construction of fire places, chimneys, doll furniture and other Christmas toys.

Spring—The celebration of St. Valentine's Day may motivate the building of a postoffice. A visit to a flower shop at Easter time will stimulate the construction of a greenhouse and counters where flowers of their own making may be exhibited. The close of school brings with it the annual exhibit of work done throughout the year. Shelves and booths for this exhibit may be made with the blocks.

Summer—The time for picnics, playground activities, circus parades and vacation trips. Slides, swings, boats, piers, trains, autos, circus wagons, grandstands and numerous other forms will find expression at this time through the building blocks.

### *E. Pictures as Stimuli:*

No attempt should be made to have young children copy or reproduce specific objects, but it is highly important that one have a collection of good pictures to be used as stimuli for further creative work and as a means of clarifying vague images. These pictures should be large, devoid of confusing or distracting details and should have the feature under discussion for the building, clearly and definitely emphasized. If it is a question of roof or chimney or porch, then the pictures selected should be those in which these features are conspicuous. Steamship, railroad and

farm products companies, builders, bridge contractors, furniture and automobile manufacturers and other local and foreign concerns are glad to coöperate in these educational projects. Much of their advertising material will be found helpful in this connection. If the work arouses a "whole-hearted interest" and if "it leads out and on to further interests and activities" then the children themselves may be relied upon to contribute valuable information, pictures and other accessory materials.

### SUPPLEMENTARY MATERIAL GIVES MEANING TO THE BLOCKS

Building with blocks tends to become a formal, mechanical procedure if divorced from other play activities and emphasized as an end in itself. A store with shelves devoid of goods to sell; an automobile or train without passengers or freight; a barn without animals or farm implements; a house without people to live in it—in fact any form without human associations will illustrate what is meant by a formal and mechanical procedure.

Joyce Kilmer has given this thought poetical expression in his poem, "The House With Nobody In It." Note these lines:

"I suppose I've passed it a hundred times, but I  
always stop for a minute  
And look at the house, the tragic house, the  
house with *nobody* in it.

\* \* \* \* \*

"I know this house isn't haunted, and I wish it  
were, I do;  
For it wouldn't be so lonely if it had a ghost or  
two."

\* \* \* \* \*

"It needs new paint and shingles, and the vines  
should be trimmed and tied;  
But what it needs the most of all is *some people*  
*living inside.*"

\* \* \* \* \*

While the educational principles underlying the work with this material are of paramount importance to the teacher, to the child blocks must ever remain as playthings. Many other materials may and should be added to give them more meaning. In this, however, there is need for careful and intelligent discrimination. Real or ready-made objects, which might better be made by the children, are often introduced. Other materials are sometimes used for certain features of the building when the blocks themselves would serve the purpose quite as well, if not better. For example, in a certain kindergarten the children made a double deck bus. One of the problems which confronted them was that of finding a way for the passengers to get to the upper deck. Finally one boy decided that stairs might be made out of paper and paper forthwith was cut and folded and with the addition of a little paste on the top and bottom step the flight of stairs was held securely in place. It answered the purpose and the effect was fairly pleasing, but steps made with the blocks would have been more in keeping with the general construction. The question, "Can anyone think of a way to use the blocks for stairs?" or "What blocks will make good steps?" would have stimulated considerable thinking on the part of the children.

Any teacher who is alert to the possibilities will realize that it is seldom necessary to substitute other materials for blocks in building since with few exceptions almost all man-made objects can be reproduced with the latter. When it is finally agreed, however, that cloth, paper or some other materials can be

used more satisfactorily in the solution of certain problems than they should by all means be used.

Blocks, under ordinary circumstances, make good railings for the porch but there are times when a railing of more delicate proportions is better made with sticks or paper. (See photographs 16, p. 190 and 10, p. 198). It is seldom that a child wishes to have a closed door on his house or it may be that his sense of fitness of things moves him to reject the blocks for this purpose since they are too clumsy. Paper doors which may be hinged or made to slide are often used instead. (See photographs 12, p. 169 and 15, p. 189). Sometimes the addition of a bit of glue, a thumb tack, a brad or screw will give just the needed bit of help but these should be used *under the direction of the teacher*. Blocks that have been glued should be washed as soon as the play is over and no harm is done, but blocks filled with tack or pin holes are unsightly indeed. The desire for such details points to the need for wood, nails, hammer and other tools, which make possible the fixed, permanent result in which the older child is interested.

Observation of the construction work done with wood and cardboard by young children has led me to believe even more firmly in the value of play with blocks prior to this type of work. How often dissatisfaction, discouragement and loss of interest result when the child finds, too late, that the windows in his cardboard house are too high or too large, that the roof doesn't quite fit or that the chimney is not correctly placed. Fresh materials must be obtained and the whole process repeated. *If a non-destructible material is used first and the child given an opportunity to play with window and door arrangements, with various types of roofs, with the position of the chimney and size of the porch in relation to the house, he will learn much about relative proportions and be prepared for the later and more permanent form of construction.*



The following materials will give added meaning to the blocks:

*Toys:*

Small dolls that will sit and stand.

Animals—cats, dogs, horses, cows, pigs, sheep, elephants, bears, lions, tigers, camels. (These may be cut from heavy cardboard, colored and mounted on standards.)

Birds—pigeons, ducks, swans, chickens.

Furniture—bed, chair, table, couch, stove, cupboard.

Vehicles—autos, trucks, wagons, street cars, trains.

Miscellaneous toys—telephone, music box for victrola, candlesticks, andirons, gasoline pump, dishes, et cetera.

*Miscellaneous Materials:*

Dowel rods of different dimensions—for axles.

Tops of milk bottles and preserve jars, button molds, ribbon bolts, large and small spools—for wheels.

Paper fasteners—for knobs on doors made of paper.

Adhesive tape—for hinges on doors, windows and gates.

Heavy twine, fine wire, hair pins, rubber bands—to fasten parts together.

Heavy cardboard, corrugated board, beaver board—to be used for roofs on houses in lieu of boards. These roofs are very effective when painted moss green, brown or terra cotta.

Cereal boxes, mailing tubes, small round boxes—used for boilers and smoke-stacks of engines, for head and tail lights on automobiles.

Wall paper, colored papers, tissue paper—for awnings, shutters, window boxes, fences, stained glass windows.

Sticks and slats—for fences, trellis, window frames, ladders.

Cloth—for curtains.

In short one may use whatever material is needed to make the form live and give it setting but not enough to detract from the main idea, that of building. Supplementary material should ever hold a supplementary place.

#### STANDARDS SIMILAR TO THOSE FOR OTHER MANUAL ACTIVITIES SHOULD BE MAINTAINED

Too often blocks are presented to children to be used freely according to individual whim and caprice. Little or no effort is made to arouse or stimulate them to improve upon their results. Each day finds them repeating something previously done or attempting a new problem even less taxing than the preceding. There is evidence of little or no progress, either from the standpoint of control of the material or control of ideas. Would this be true if the teacher had standards for block building in any way comparable with those for work with clay, cloth, wood, paint or crayons? In clay modeling, for example, the child is allowed ample opportunity to experiment and to express many ideas in a more or less crude fashion but sooner or later he loses interest unless he has the satisfaction of knowing that he is doing better the thing he has done before. In other words he must feel his growth along the line of technique. Help, sufficient to encourage him to further effort, is offered when he needs it. Emphasis is put upon the essential features of the thing made; upon the proportion, balance or decoration of the form.\*

Suggestions are given for the improvement of the base of the candle-stick; the handle on the basket; the ears, legs and tail of the animal.

Is it not reasonable to expect that similar standards may be applied to the building with blocks? Let us suppose that a house

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\* Mathias, Margaret, "The Beginnings of Art in the Public School," pp. 19 and 20.

has been constructed. Is the house well built? Why? Why not? Do the blocks fit? Is the foundation strong? What have you to say about the walls? How will the people living in the house get fresh air and light? What do you think about the number of windows? Are they well arranged? Are they large enough? What can you add to the porch to make it a safe place for the baby to play? How is one going to get into the house? How can you make the roof stronger so it will not fall upon the people inside? Can you find blocks that would make a better roof? Can you find one block that will take the place of two? These are only a few of the suggestive questions that might be asked as a means of stimulating improvement in the building of a house and yet we often find children building as crude houses at the close of the year as in the beginning, although they show marked growth in the use of clay and other materials. Where this is true are we not justified in believing that either the building materials are limited in possibilities or the teacher is lacking in knowledge of what may be done with them and therefore has no basis for constructive criticism? If teachers were to show the same interest in the progressive development of block work that they show in other manual activities, would the results not be a surprising revelation?

#### SOME POINTS TO BE KEPT IN MIND IN SUPERVISING PLAY WITH BLOCKS

1. Were the children interested in mere manipulation of the material or did they have a definite purpose in mind? If the former how do you explain it?
2. What was the aim of the lesson? Was it achieved?
3. What motivated the lesson?
4. Was there evidence of too much or too little teacher con-

trol? Was there opportunity for initiative on the part of the children?

5. Did the work point to previous lessons in preparation for this one? Did it point forward to succeeding ones?

6. Was the material adapted to the problem? Were the children making the best use of the material?

7. Did the work make sufficient demands upon their physical and intellectual powers?

8. Was there enough material? Too much material?

9. Was outside material used to give more meaning to the forms?

10. Were the suggestions for improvement in line with the interest and ability of the children?

11. Was there evidence of the development of any one of the following habits or attitudes: Respect for and an orderly use of materials; sense of responsibility; ability to attack and persevere in the solution of a problem; ability to plan and to calculate; ability to work with others; to share material; to accept suggestions for improvement; to initiate problems; to follow directions given by another; interest in and respect for the work done by others; satisfaction in accomplishment?

12. Was the material conveniently placed?

13. Was time wasted in getting blocks out or putting them away?

14. Were the children grouped according to their ability to handle the material?

15. Did the teacher sense individual needs?

16. Was there a period for the summing up of the results? Were standards set in this period for improvement along any line? Were one or two definite points stressed or were the chil-

dren confused by too many standards? Were the children given an opportunity to judge of their own work?

### OBJECTIVES FOR A YEAR'S WORK WITH BLOCKS

#### *I. Growth in muscular control*

- A. Shown by the ability of the children to get their material more quickly and quietly.
- B. Shown by their ability to handle, hold and place with greater skill and speed both large and small blocks and to transfer this to other situations which call for similar skill.

#### *II. Development of worthwhile personal and social habits*

- A. Sense of responsibility in getting their material out and putting it away in an orderly manner when they have finished playing with it.
- B. Ability to plan and to carry out their individual plans without losing interest in the plans of others.
- C. Desire to experiment and investigate.
- D. Ability to persevere for longer periods of time.
- E. Desire to improve upon preceding efforts and results.
- F. Ability to work with others.
- G. Growth in
  - 1. Thoroughness and accuracy in execution and in the observation of objects to be reproduced.
  - 2. Self-confidence.
  - 3. Self-initiated industriousness.
  - 4. Independent thinking.
  - 5. Ability to listen to, interpret correctly, remember and execute directions given by another.
  - 6. Judgment—in choosing a good place in which to build; in selecting appropriate material for the

expression of the idea; in the execution of the idea; in the selection of points for criticism.

### *III. Correlation with other subject-matter*

#### **A. Health**

1. Building houses with windows and sleeping porches stressing the need for fresh air and sunlight.
2. Building furniture appropriate for living room, dining room, bedroom, bathroom and kitchen.
3. Housekeeping activities in connection with the discussion of home life.

#### **B. Language**

1. In the ability to talk more freely and intelligently about the things they have made.
2. By the addition of new words to their vocabulary  
Nouns—names of objects and parts of objects.  
Verbs—such as fit, pile, place, move, remove, add, lift, push, draw out, make, build, change.  
Attributes of objects—strong, even, smooth, straight and their opposites.
3. In the ability to recognize word symbols such as those found in the names of buildings, signs, etc.

#### **C. Mathematics—Play experiences with**

1. Simple number combinations.
2. Certain arithmetical processes, such as addition and subtraction.
3. Idea of numbers of blocks or objects in a group.
4. Quantitative vocabulary such as  
Size—large, small; long, short; wide, narrow;  
Form—square, oblong, triangular;

Position—top, bottom; over, under; beside; right, left; between.

Quantity—as long as—for the kindergarten; inch and foot—for the first grade.

5. Fractions

$\frac{1}{2}$  applied to objects and small groups.

D. Art—The awakening of an appreciation of

1. Simple repetition.
2. Arrangement and balance of parts.
3. Relative proportion.
4. Clay modeling, painting and crayoning in connection with their building projects.

E. Industrial Activities

Skill in the use of cutting, pasting, cardboard construction, weaving, sewing, etc., in executing details to supplement the work with the blocks.

F. Geography—Excursions

G. Safety

1. In finding a place to build where the work will not be in the way of other persons.
2. In making buildings strong and stable so they will not fall on the children.
3. In walking carefully around completed forms in order not to strike against them.
4. In picking up all unused material to avoid tripping.
5. In carrying and passing blocks carefully—never throwing or tossing from one to another.

*IV. Emotional reactions*

- A. Pride and satisfaction in achievement.
- B. Increased interest in environment.
- C. Pleasure derived from work.
- D. Attitude of respect toward those who labor.

**BLOCK BUILDING AS A PRE-READING EXPERIENCE**

The appalling number of failures in first grade reading has led teachers to investigate the possible reasons for these failures and to formulate some of the factors necessary in order to insure the opposite result. The report of the Reading Readiness Committee of the International Kindergarten Union, which appeared in the *Childhood Education Magazine* for January, 1927, sums up in an interesting fashion the result of the investigation as to the reading readiness of children entering the first grade.

As a part of this report, Dr. William S. Gray of the University of Chicago, in his article on "Training and Experiences That Prepare for Reading" states six prerequisites to "rapid progress in learning to read". (See page 211—January issue of *Childhood Education*). If every teacher were to have some of these points in mind and were to consciously apply them to the work with blocks it might change considerably the present attitude toward this phase of the work. It is because so much time has been wasted in fruitless effort with material unsuited to the expression of ideas and beneath the capacity of children who are ready to cope with problems involving intellectual effort, that it is looked upon as a play material having little value outside the realm of the nursery. To this end it might be well to have in mind certain objectives which can be used from time to time as a check upon the progress which has direct bearing upon reading, that is made throughout the year.



Any one or more of the following should arouse inquiry on the part of the teacher as to the child's possible future success in reading: Failure to follow simple directions; inability to retain in memory and to recall; lack of imagination; dearth of ideas; slow and inaccurate visual recognition; lack of interest in preparing or reading signs and labels; lack of confidence, initiative and independent thinking; little growth in vocabulary and lack of desire to attack new problems (Childhood Education Magazine, January, 1927, pp. 216-218). They should likewise move her to see that in whatever activity the child engages—whether it be play with blocks, games or other activities—emphasis should be placed upon those habits and attitudes which make for reading success.

Perhaps it might be well to also emphasize the fact that it is just as important that the teacher be equally alert to the needs of those children who manifest the habits and attitudes that show a readiness *for* reading since not to “strike while the iron is hot” might delay their progress at this point and bring about a loss of interest and dissipation of energy for which later effort cannot compensate.

#### A REPORT OF THE WAY A BLOCK PROJECT WAS UTILIZED TO STIMULATE AN INTEREST IN READING

Two boys built a house of blocks. It was a larger house than had ever before been built in the kindergarten.

The dimensions were as follows: Floor space, 52 by 32 inches; porch floor, 32 by 12 inches; height, 45 inches. It had a basement with windows on all sides, a large front porch, good walls with windows, a front and back door and back steps.

When the house was ready for the roof, I wondered what the boys would do for I knew we had nothing in the kindergarten

large enough for this purpose. They suggested that the custodian might be able to help them. Upon their request, he came over with his ruler and, while the boys watched, took the measurements of the house, including the porch. He then brought a piece of beaver board large enough to cover the house and porch.

The boys next wanted to make an attic. They found, however, that there were only enough triangular blocks for the front and rear walls of the attic. They suggested that they might cover the space between with paper. They found some large sheets of red paper in the cupboard which they pasted together and when I next looked they were standing on chairs trying to throw the paper over the top. I helped them to lift it over and they pasted it firmly to the blocks. They then wanted a chimney. They succeeded in making one from the red cardboard and I suggested that they wait until I could help them to find a way to fit the chimney into the roof, but when I returned to them, they had cut a hole in the paper roof exactly to fit the chimney and had run the chimney down to the floor of the attic.

They made chairs for the porch, and other children, who had been weaving, supplied two large attractive rugs. The boys brought some clay people which had been made for a previous project and placed them in the chairs.

After the house was finished, I suggested that we write a description of it to send over to Miss ——, our principal. I also said that we would ask Miss —— whether or not she thought it was well written. We decided to write it on the blackboard first. The children told me what to write. They gave it the title—The House. Every sentence was carefully stated and the whole made a comprehensive and connected account of the work. Miss —— pronounced it very good.

It happened that the words "the house" appeared in the

account five times, the first time being the title at the top. I asked the children whether they saw the same thing anywhere else in the story. They located it very easily and we had various children come and point out the different places.

The first sentence of the story was, "Two boys built a house." I called attention to the phrase "Two boys" and asked if they could find that again in the story. They found two places where it said "the boys". The children themselves noticed the difference between "two boys" and "the boys."

This all happened the last week of school in June and the interest in the house and the story continued up to the last day.

Children very often ask for certain words to be placed where they are needed in connection with the more ambitious projects which they develop toward the end of the kindergarten year, such as—the name of the store; "Stop" and "Go" for a traffic semaphore; numbers for the face of a clock on a tower; names for street signs, ticket windows, boats, cars or automobiles; their own names as builders or to mark incomplete work.

This demand for the printed symbol is a very definite indication of readiness for its use.

## CONCLUSION

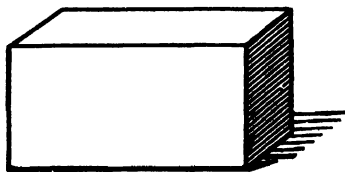
As stated in the beginning, this book is intended as a guide for the teacher and mother. If it has contributed in any way to their appreciation of the wealth of educative possibilities in building blocks for children of nursery, kindergarten and primary ages, then it will not have been in vain. With the recognition of these possibilities they will want to inspire the child to achieve even higher standards and, as they note his satisfaction and joy in the accomplishment of more and more difficult tasks, they too will say,

"He builds low who builds beneath the stars."

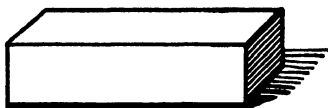


# BLOCKS RECOMMENDED FOR USE IN NURSERY AND CLASSROOM.

## DOUBLE ENLARGED BLOCKS

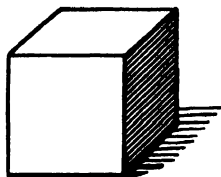


1

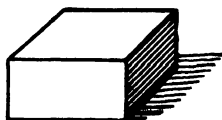


2

1. Oblong block 8" x 4" x 2". 2. Pillar 8" x 2" x 2".



3

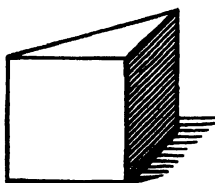


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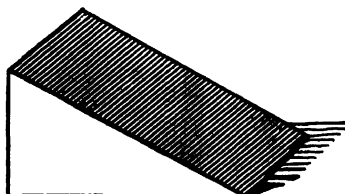
3. Square Prism or Plinth 4" x 4" x 2". 4. Half-pillar 4" x 2" x 2".  
5. Cylindrical Pillar 8" x 2" x 2".



6

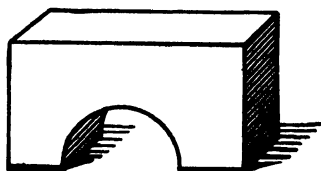


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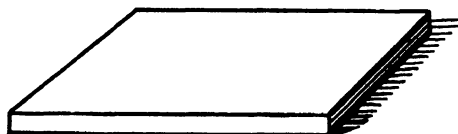


8

6. Triangular Prism—Half of 4" Cube. 7. Triangular Prism—Quarter of 4" Cube.  
8. Triangular Prism—Half of Prism 8" x 4" x 4".



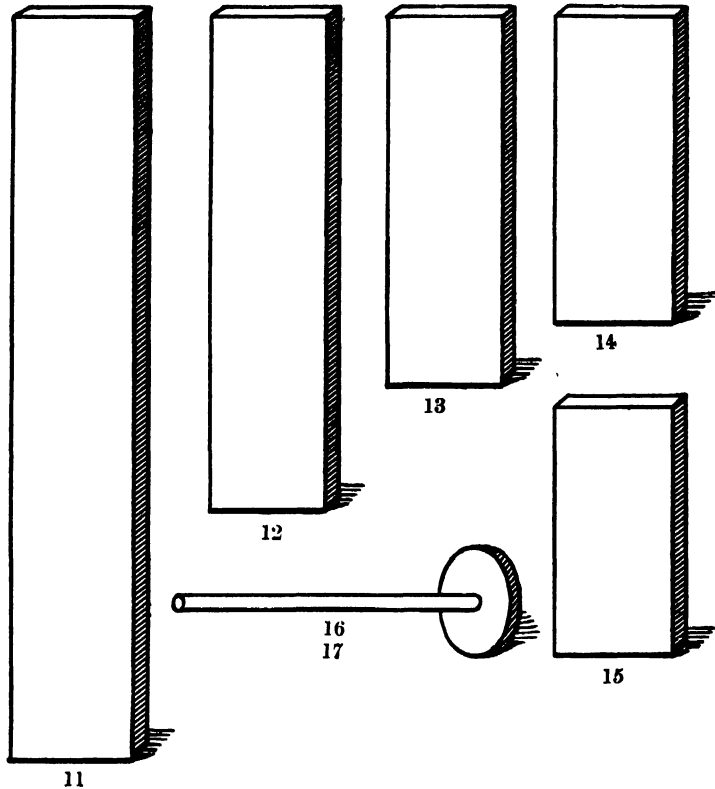
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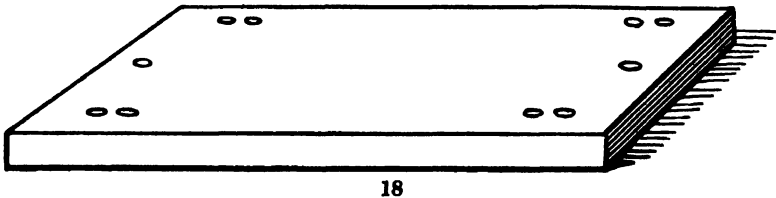
10

9. Arch—cut from oblong 8" x 4" x 2". 10. Board 8" x 8" x 1/2".

# ENLARGED BLOCKS

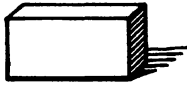


11. Board  $24'' \times 4'' \times 1''$ . 12. Board  $16'' \times 4'' \times 1''$ . 13. Board  $12'' \times 4'' \times 1''$ . 14. Board  $10'' \times 4'' \times 1''$ . 15. Board  $8'' \times 4'' \times 1''$ . 16. Dowel rod— $10\frac{1}{2}'' \times \frac{3}{8}''$ —perforated.  
17. Disc— $3\frac{1}{2}'' \times \frac{3}{4}''$ — $\frac{3}{8}''$  perforation.



18. Board  $20'' \times 8'' \times 1''$ —drilled with 10 holes.

## ENLARGED BLOCKS



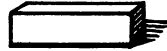
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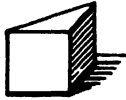
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21



22



23



24



25

19. Oblong block 4" x 2" x 1". 20. Square Prism or Plinth 2" x 2" x 1". 21. Half-pillar 2" x 1" x 1". 22. Pillar 4" x 1" x 1". 23. Triangular Prism—Half of 2" Cube. 24. Triangular Prism—Quarter of 2" Cube. 25. Arch—cut from oblong 4" x 2" x 1".

## SMALL BLOCKS



26



27



28

26. Oblong block 2" x 1" x 1/2". 27. Square Prism or Plinth 1" x 1" x 1/2". 28. Pillar—2" x 1/2" x 1/2".





















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